Abraham Lincoln Memorial Bridge (Blair Bridge)
Blair vicinity
Washington County, Nebraska
Harrison County, Iowa

HAER No. NE-1

HAER
NEB,
89-BLAIR.V,
2-

PHOTOGRAPHS
HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Department of the Interior
National Park Service
Rocky Mountain Regional Office
P.O. Box 25287
Denver Colorado 80225

HAER
NEB,
89-BLAIR.V
2-

Historic American Engineering Record

Abraham Lincoln Memorial Bridge

Location:	Spanning the Missouri River on U.S. Highway 30, 1.5 miles east of Blair, Nebraska; NW 1/4, NW1/4, SW1/4, of Section 8, Township 18 North, Range 12 East; Washington County, Nebraska; Harrison County, Iowa; UTM: 14.742260.4603770
USGS Quadrangle:	Modale, Iowa - Nebraska (7.5 minute series, 1970)
Date of Construction:	1928-29
Designer/Contractor:	Harrington, Howard and Ash, Design Engineers Sverdrup and Parcel, Construction Engineers Woods Brothers Construction Co., Construction Management Wisconsin Bridge Company, Superstructure Contractors Kansas City Bridge Company, Substructure Contractors
Present Owner:	State of Nebraska / State of Iowa
Present Use:	Two-lane highway bridge
Significance:	The result of years of agitating, maneuvering and planning, the Abraham Lincoln Bridge is significant as a regionally important crossing of the Missouri River - the first such privately funded structure built between Nebraska and Iowa during the toll bridge boom in the 1920s. The bridge is one of fifteen Pennsylvania through trusses erected over the Missouri in that decade: a representative example of the industry standard long-span truss.
Report Assembled by:	Clayton B. Fraser Principal, **FRASER**design Loveland Colorado 80537 June 1987

PROLOGUE

Late one summer night in the mid-1920s, Reed O'Hanlon, his wife, Ruth, and their four children began the return trip to Blair, Nebraska, from a day's outing across the Missouri River at Lake Okoboji, Iowa. The rain was coming down hard. The dirt road between the town of Missouri Valley and the river was a hopeless quagmire. As he squinted through the rain-streaked windshield, straining to see beyond the beams of his headlights and clutching the steering wheel to keep the car on the road, O'Hanlon prayed that the ferry across the river was still operating so late. But as he approached the ferry landing, his heart sank. Charley Haynes, the ferryman, had gone home for the night, making passage impossible. O'Hanlon had no choice but to turn the car around and begin the arduous detour to the Council Bluffs crossing, several miles south. That night, on the long way around to Blair, he resolved to build a bridge over the Missouri River.

Or so the locally popular story went.[1] In truth, the highway bridge over the Missouri River at Blair was the result of years of agitating, maneuvering and planning by a large cast of characters, beginning with the completion of the railroad bridge at this point four decades earlier. Before it would become a reality, the million-dollar structure would involve Congress and the President, the War Department, two state legislatures, county and city officials in two states, the region's largest civil engineering firm, three of the largest bridge contractors in the Midwest and countless local investors and supporters. The first highway bridge over the Missouri River between Iowa and Nebraska in the 20th Century, the Blair Bridge was at once regionally important and typical of the toll bridge building frenzy that seized the nation during the 1920s. It brought into play many of the same political and financial elements faced by other Missouri River communities.

THE MISSOURI RIVER

Had O'Hanlon been trying to bridge any other river but the Missouri, this would not have been nearly as difficult. Of the three great tributaries of the lower Mississippi - the Missouri, the Ohio and the upper Mississippi - the Missouri vexed civil engineers most. It was the Missouri River, and not the wider Mississippi, that presented the most formidable obstacle to travel between the Atlantic and Pacific coasts, according to Major General Grenville M. Dodge, Chief Engineer for the Union Pacific Railroad.[2] Bounded over most

of its length by steep bluffs or broad flood plains, floored by a deep bed of alluvial sand, subject to violent spring and summer flooding, choked by massive ice floes in the winter, and continually redefining its main and subsidiary channels, the Missouri River impeded overland traffic throughout much of the 19th Century.

The Ohio, on the eastern slope of the Mississippi basin, flowed through a settled country with relatively high river banks and a hard, stable bed. It was the most easily bridged. The upper Mississippi, which flowed through the plains of the central valley, had a sandy and unstable bed, but fell at a shallow rate and had a predictable channel over most of its length. The Missouri, on the other hand, combined an unstable bed with a quick and unpredictable stream flow. "The Missouri," stated 19th century civil engineer Octave Chanute, "drawing its source from the eastern face of the Rocky Mountains, and flowing with a rapid descent down the westerly slope of the great basin, unites within itself all the elements of unstableness and irregularity, combining the impetuosity of a mountain torrent with the volume of a lowland river."[3]

The Missouri's navigable length from Fort Benton in Montana Territory to its mouth at St. Louis extended some 3150 miles, as computed by river pilots. It drained a watershed of 518,000 square miles: an area more than one-third greater than the combined basins of the Ohio and the upper Mississippi. Over most of its length, the Missouri coursed through an alluvial bottomland enclosed on both sides by bluffs. The distance between these bluffs ranged from one-and-a-half to fifteen miles, and they were highest and most rugged where they were closest together. Only slightly higher than the average high water level of the river, the bottoms were often inundated by flooding. For about five hundred miles from the river's mouth almost to the southern border of Nebraska, they were heavily timbered with cottonwood, walnut, oak and elm. Beyond this, the timber was more scarce and the bottoms prone to prairie. The river wound between the bluffs with little apparent regularity with a width ranging from 900 to 4500 feet. At low water, the channel constricted to about 600-700 feet, leaving the remaining width a dry sand bar.

During the warm-weather months, the river held tremendous amounts of silt in solution as it flowed through the valley. This solid matter could only be carried when in rapid motion and was deposited wherever the river slowed. Thus, while the channel was cutting into the sand bar on one bank, it was depositing silt and creating another on the other. Spring and summer floods could change the nature of the stream flow entirely overnight in certain stretches, making navigation risky. To make matters worse, tree trunks which washed into the water tended to catch on the sand bars, where they were partially buried. These created snags for which the river was notorious.

When the width of the bottomland was not more than two or three miles, the usual course of the river was to follow along the base of one of the bluffs for a short distance until deflected by an obstacle. Then it crossed the valley to the other bluff. The vein of strongest current was readily observable as it

crossed the river diagonally in the straight reach between the serpentine turns. The current was always strongest on the outside of the turns. By this action, the river typically washed the lower bank as it crossed the bottomland, continually forming new sandbars which advanced down the valley. When the hottomland exceeded three miles in width, the river was just as likely to return to the hluff it had left before crossing the valley. In these locations, such as the length hetween Nehraska and Iowa - in which Blair sat - the Missouri tended to be very irregular.

BRIDGING THE MISSOURI RIVER AT BLAIR

The Missouri River passed through a natural opening in the bluffs, known as Carter Valley, some twenty river miles north of Omaha. To take advantage of this excellent river-level crossing site, the Sioux City and Pacific Railroad routed its line to this point when surveying between Sioux City and the Union Pacific transcontinental route in 1864. Five years later, investor John I. Blair acquired the railroad, purchased 1075 acres of land about 1-1/2 miles west of the crossing and platted a town, naming it after himself. The town of Blair grew quickly - almost overnight - in the tradition of 19th Century speculative towns, and soon assumed a role as regional nexus of overland transportation.

Faced with the prospect of building an expensive and technologically untried structure to span the Missouri permanently, the SC&P skirted the problem in the 1870s by ferrying its trains aboard steamer boats. Each fall, railroad crews erected "winter bridges" - temporary timher trestles supported by driven piles - to carry the trains over the frozen river.[4] The winter tracks broke up each year with the spring ice melt, however, and the transfer steamers had severe liabilities of their own. Time-consuming and dangerous, they were suhject to interruption hy downriver hoat traffic and seasonal freezing and flooding. Moreover, the cumbersome transfer operations created tremendous bottlenecks during peak freighting seasons, snarling rail traffic for hours or days. For pedestrian and vehicular traffic, ferry transportation remained the only mode of crossing the river at Blair; passage came to a complete halt during the winter.

Late in 1881, the SC&P contracted with civil engineer George Morison to design a permanent hridge over the river at Blair. The relatively flat nature of the riverhanks that had benefited the ferry operation did little to help with the construction of a bridge. In this, the Blair site differed topographically from those of virtually all other previous Missouri River bridges. According to Morison, the best location for a bridge over the Missouri was just helow one of the great bends, especially if the current impinged on a rocky shore. Under such conditions, the bedrock beneath the river was generally

shallow on the bluff side, where the main channel flowed. The least promising location was on a long, straight stretch, where the bedrock was usually found at great depth and the current veins were likely to be variable. This would make it necessary to sink excessively deep foundations, construct extensive shore protection to control the channel and erect an unnecessarily long bridge.

The Blair site was situated on a broad sweep of the river, fulfilling part of the requirement. But it lacked the bounding bluffs to control the channel and scour the bedrock. The river at this point was therefore subject to dramatic changes of course, even more than usual for the restless watercourse. "The fact that the Missouri runs for so great a distance here without striking the bluff makes its regimen unusually regular," Morison reported to the railroad, "there being no positive fixed points to exercise a corrective influence... While control of the river might be unusually difficult, the construction and maintenance of the bridge itself would be a comparatively simple thing."[5]

Morison's prediction proved correct. The poor topography and soil conditions at Blair prompted the engineer to look for alternate sites, but eventually he located the bridge near the existing ferry landing and accepted the fact that it would be inordinately expensive. Comprised of three 330-foot Whipple trusses supported 50 feet above high water by massive stone piers, the Blair Bridge took a year to build and cost almost $1.3 million: $400,000 of which was spent on shore rectification.[6] Its completion in October 1883 marked a significant milestone for the nearby town. As only the eleventh span over the Missouri, the bridge attracted considerable rail traffic, which brought with it prosperity to Blair. The Blair Bridge carried trains only, however, and for decades to follow, wagons, pedestrians and stock had to rely on a ferry to cross the Missouri River at this point.

Residents of Blair and Missouri Valley, across the river in Iowa, agitated sporadically for a vehicular bridge over the next thirty years. In 1913, the issue grew critical as the Lincoln Highway was plotted through Nebraska and Iowa. The Lincoln Highway Association, organized that year, was charged with developing the country's first model national highway between San Francisco and New York. The officials had intended to take the shortest and most direct route across the nation, but because of the unbridged Missouri River at Blair, chose to ignore the straight line west from Missouri Valley.[7] Instead, the surveyors routed the highway south from Missouri Valley to Council Bluffs, crossing the river at Omaha before returning north to Fremont, Nebraska. Residents of Blair and the surrounding communities were left to use the established county road and ferry between Missouri Valley and Fremont, sorely aware of the opportunity lost.

In 1919, the Nebraska legislature created a state highway department under the aegis of the Department of Public Works, in response to the Bankhead Act passed by Congress in July 1916. This agency - and the millions of dollars of federal highway aid which it would disburse - gave Nebraska's financially beleagured counties new hope for construction of roads and bridges. In 1923,

the highway department designated the Washington County route between Blair and Fremont as the "B-Line" Highway and posted markers featuring an underlined blue "B" on a white background.[8] Area businessmen soon launched a campaign to promote the B-Line as a Lincoln Highway cutoff, pointing to the elimination of twenty-eight miles between Missouri Valley and Fremont.

Efforts to promote the B-Line were largely thwarted by the lack of widespread community support. Blair residents were galvanized into action in 1925, however, when neighboring Iowa towns began campaigning for the construction of the Upland Highway, another Lincoln Highway cutoff with a proposed Missouri River bridge at Decatur, Nebraska. In November, the *Blair Tribune* stated clearly the consequences posed to Blair and other B-Line communities by the proposed new route:

> **If Decatur gets a bridge across the Missouri River, Blair can't have another with federal and state aid; and the thing for us to do is to beat Decatur to it. In this we should now get the unstinted support of Mo. Valley as well as the assistance of Fremont and other towns that may be effected. These towns will lose if Blair loses.** [9]

The Blair community mobilized as never before in the face of this threat. The Chamber of Commerce called meetings with every community which had a stake in the matter and organized a promotional committee headed by Blair attorney Reed O'Hanlon to rally support for the erection of a bridge across the Missouri River. With a well-organized campaign, the boosters found overwhelming support; one local newspaper editor proclaimed grandly, "Every resident of Washington County should be in favor of it. More than that, every citizen of Nebraska should be for it."[10] Unsurprisingly, the City of Omaha opposed the Blair bridge proposal, fearing the loss of business caused by diverting traffic from the Lincoln Highway through that city. Noting the close watch Omaha maintained over other Nebraska cities seeking free bridges, the *Blair Tribune* commented acerbically:

> **In the matter of getting a bridge at this point, Blair should not look to Omaha for a particle of help; its sole hope lies in teaming up with the business interests of other communities like Nebraska City and places south of Omaha that want a bridge.** [11]

Indeed, Blair was but one of many communities in the region clammering for a bridge over the Missouri River. Late in 1925, officials from several eastern Nebraska counties passed a joint resolution requesting the Nebraska legislature to authorize construction of seven toll-free bridges across the Missouri. Sited on existing commercial and military highways, the locations were Omaha; Niobrara; South Sioux City; Blair; Rulo; Nebraska City and Yankton, South Dakota - Nebraska.[12] To fund the construction, they proposed a 10% state tax on cigarettes.

Several months after drafting the free bridge resolution, representatives from eight eastern Nebraska communities met in Omaha to form the Nebraska Interstate Bridge Association. The localities represented included Plattsmouth and Decatur and those mentioned in the resolution - with the exception of Yankton, which had apparently resigned itself to continued use of an existing toll bridge. Focusing on the need for federal or state aid, the committee noted that all three of the existing vehicular bridges over the river between Iowa and Nebraska were operated as toll structures. The Nebraskans pointed to the South Dakota legislature, which had funded a total of five state-aid bridges over the river in three years.[13] With costs to be divided between neighboring states and the evident financial means to carry out such construction, they called the legislature to task, saying:

> **We have built a ten million dollar state house and paid for it without noticing the cost. The same levy continued after the completion of the state capitol, will in two or three years pay all of our part of this entire program and we will never miss it or regret it.** [14]

While the Nebraska and Iowa legislatures grappled with the free bridge issue early in their 1927 legislative sessions, the City of Blair petitioned Congress for authorization to build a bridge over the Missouri River. Nebraska Congressman Sears and Senator Howell guided the legislation through Congress within days of its introduction, giving Blair the first glint of hope that the long-awaited bridge might soon became a reality. The Congressional authorization carried with it no provision for funding the bridge, however, and in the Nebraska state house the free bridge bill was floundering.

Intended to replace Missouri river toll bridges with free ones, the original bill earmarked 5% of the state gas tax - or about $75,000 per year - for interstate bridge construction. The legislation was favored by Governor McMullen and representatives from the majority of the state's bridge-seeking communities, but in the Nebraska House it ran into opposition centered on the issue of financing. Four other bills soon evolved, each proposing a different method of funding.[15]

Members of the Nebraska Senate scuttled the free bridge concept entirely in favor of a plan to build state-operated toll bridges. Fees would be collected on these until the construction costs were repaid. Known as the Kryger-Stinson Interstate Bridge Bill, the Senate's version met with violent opposition in the House. Perhaps the most vehement and outspoken adversary was the Omaha and Council Bluffs Street Railway Company, which stood to lose its lucrative toll bridge franchise at Omaha.[16] Prodded by the O&CBRR, opponents fueled fears that the gas tax allocation would drain revenue from the state's highway program, despite denials by State Engineer Roy Cochran and Governor McMullen.

They succeeded in diluting the bill substantially before forwarding it to the governor for approval. The amended bill removed the state's direct

interest in non-federally aided construction and eliminated the allocation of gasoline funds toward bridge construction. Furthermore, the Nebraska act remained unenforceable without companion legislation from bordering Missouri River states. The Missouri and Iowa legislatures had already adjourned for the session, leaving Nebraska's hard-pressed local governments to their own resources.

When McMullen signed the Kryger-Stinson Bill early in April 1927, *Blair Tribune* headlines read, "Bridge Bill is of Little Use to Blair." But the embittered bridge boosters maintained their determination to secure a bridge and immediately turned to other alternatives:

> **To wait for the slow grinding of the state and federal government in which untold wire pulling by politicians and endless miles of red tape meant that perhaps the next generation might reap the benefit. The thought was discouraging and when the Jesse T. Wachob Company, a corporation of Omaha, asked for a franchise to build a bridge across the river at this point the consent of the city council was given instantly... The structure, which is to cost $400,000 is to be built just south of the railroad bridge. It is to be financed by the company who will in their turn reap their returns from the tolls charged to those who used the bridge.** [17]

The bridge proposal, advanced by Jesse T. Wachob and his attorney, Reed O'Hanlon, gave the first glimmering that O'Hanlon and the promoters of the Blair Bridge were about to get into the business of toll bridge construction.

THE TOLL BRIDGE INDUSTRY

The concept of toll collection as a means of financing bridge construction was scarcely a new idea. Toll bridges and toll roads had long been a part of the American overland network. On virtually all of the earliest railroad bridges over the Missouri River, tolls were charged on a per-car or per-passenger rate. Probably the most notorious of these was the Union Pacific Railroad's bridge at Omaha, completed in 1872 at a cost of $2.9 million. The railroad charged an exorbitant 50 cents each for passengers and $10 for each carload of freight. While toll receipts averaged about $15,000 per month, UP directors blithely sidestepped complaints from Congressmen and competing rail lines forced to pay the tolls. The brouhaha over operation of the Omaha Bridge boiled throughout the early 1870s, finally reaching the Supreme Court in 1876. There the Union Pacific lost, but in keeping with the railroad's most favored status, management successfully lobbied Congress to allow them to retain the tolls. Business continued as before.[18]

As vehicular bridges were later built over the great Midwestern rivers, their owners too charged tolls to help defray costs. Major structures financed on this basis included the Eads and McKinley bridges at St. Louis; the Susquehanna River bridges at Columbia-Wrigbtsville, Harrisburg, Clarks Ferry and Havre de Grace; the Niagara Falls bridges; the Ohio River bridges at Cincinnati; and bridges at Wheeling, West Virginia, Keokuk, Iowa, and Omaha, Nebraska, among many others.[19] For the most part, though, the ponderous financial and technological aspects of bridging the nation's major rivers offered nearly unsurmountable obstacles to public and private entities alike through the first two decades of this century.

The bridge issue reached crucial proportions during the 1920s in the face of an ever-increasing stream of automobiles on the nation's higbways. As mandated by the Bankhead Act in 1916, the U.S. Bureau of Public Roads and state highway departments located and planned a network of higbways and bridges based on extensive traffic data. But funding to implement sucb plans generally fell far short, with momentous bridges - of momentous cost - the least budgetable items of all. The need was thus establisbed and documented. And private investors, armed witb tbe traffic data, soon stepped in to fulfill this need. Toll bridge construction developed from virtual inactivity in 1920 into a burgeoning industry in just seven years.

The toll bridge boom began in earnest in 1923, wben the New York legislature authorized the erection of tbe Bear Mountain Bridge over the Hudson River as a private toll structure. Coupled with the completion of the publicly operated Philadelphia-Camden Toll Bridge shortly thereafter, the Bear Mountain Bridge inspired a flurry of private toll bridge construction.[20] As more bridges were funded and built through the mid-1920s, bankers and investors flocked eagerly to provide capital funds. The industry soon developed a deservedly healthy profile. Investors buying bonds for toll bridges could expect lucrative returns on their money: in 1927, an average of 13.9% on privately owned bridges and 8% on publicly owned.[21] Toll receipts the next year totaled slightly more than $13.8 million. And by August 1930, the aggregate private and public investment in toll bridge projects - proposed or completed - approximated a staggering $1.1 billion.[22] The business weekly, *Barron's*, reported in May 1928 that of the 100 bridges it had investigated, only one was not returning 15% greater returns than its initial estimates. Some bridges were paying as much as 50% per year on the money invested.[23]

Under the Federal Bridge Act of 1906, Congress exercised authority over bridge spans and clearances on navigable waterways through tbe Secretary of War and the U.S. Army Chief of Engineers. In granting bridge franchises for interstate structures, the lawmakers assumed jurisdiction over bridge financing as well and, in effect, bridge site selection. Congress could thus control the complexion of the toll bridge industry, by issuing or denying toll bridge franchises. And the indications given by Congress in the late 1920s were decidedly pro-industry. By 1927, toll bridges operating in the United States numbered 233. That year alone, Congress granted 163 franchises for toll bridges - 53 of which were to private concerns.[25] A year later, the lawmakers

approved an additional 67 franchises out of 122 proposed [see Figure 1].[26] To further encourage toll bridge construction, Congress rescinded its prohibition of federal funding for roads which served as immediate approaches to toll bridges. As a result, the states could commit federal aid allocations to help fund their own toll bridges or form informal alliances with private toll bridge companies. Of the 424 toll bridges in operation, under construction or proposed in October 1927, some 217 - over half - were situated on the federal aid highway system.[27]

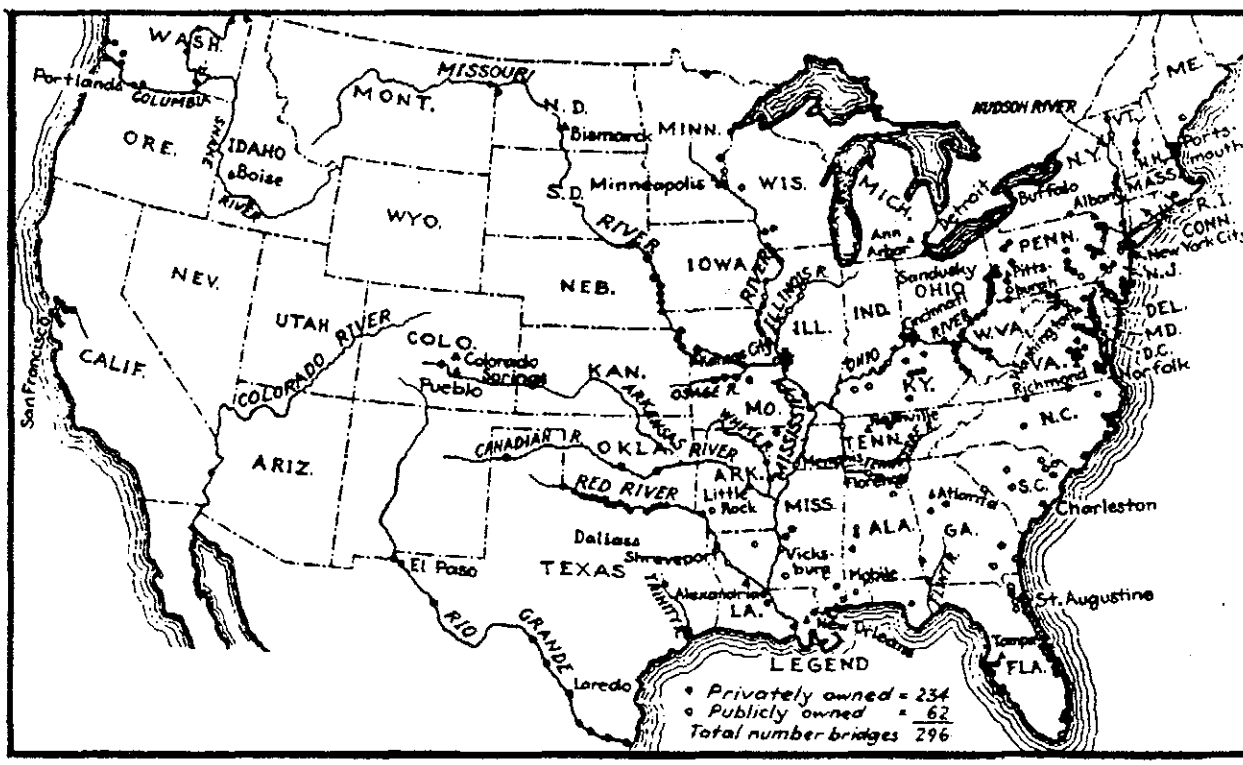


Fig. 1 Toll bridges in 1931 (from *Engineering News-Record*, 4 December 1930)

Despite such strong Congressional support, the toll bridge industry came under increasingly vocal criticism, primarily from highway administrators. Thomas MacDonald, Director of the U.S. Bureau of Public Roads opposed them, but grudgingly acknowledged Congress' prerogative to grant the franchises. *American Highways* graphically stated its opposition in an April 1927 article, titled "The Toll Bridge Menace": "Covered wagons and covered bridges belonged to the same era, but a purring automobile and a toll bridge do not. Bridges are a necessity. Privately owned bridges, located at strategic points, carrying 30-year franchises, are a private snap."[28] Despite the documented success of many private toll bridge projects, a reversal in the construction

trend favoring public toll bridges became evident in the latter part of the decade. At this time, the demand for major bridges and the consequent "toll bridge menace" received extensive coverage in engineering and highway journals around the country, as illustrated by *Engineering News-Record* in July 1928:

> **In the short period since the Bear Mountain bridge over the Hudson was undertaken a remarkable activity of promoters and bond brokers had developed. Ample demonstration has been had of the service which private capital can render, even apart from financial readiness, by providing needed bridges without the delays and negotiations that beset most munincipal undertakings. At the same time strong opposition has spring up to the permanent laying of toll barriers across our road system. The public has long since come to understand that public improvements must be amortized in a measurable time if we are to progress, and it therefore sees in the private toll bridge a disturbing and hampering element.** 29

When toll bridge construction declined precipitously at the end of the decade, the reasons were financial rather than legislative. With franchises so easily granted, many private companies had rushed to obtain the rights to span virtually all the major rivers. The most promising crossing sites were claimed early. Later, engineers and bond brokers traveled around the country, searching for likely bridge sites and applying to Congress for franchises without local support or, in some cases, even local interest. The ethics of the industry came under more intense scrutiny as several toll companies failed after floating substantial bond issues. The solvency of private endeavors in question, *Engineering News-Record* concluded in 1931:

> **Due to the over-promotion of many of the private projects, the decline in the price of their securities, failure to earn interest payments in some instances and a growing antipathy on the part of the public toward privately owned toll bridges, much of the huge volume of proposed private construction will not materialize.** 30

Additionally, stories of fraud and conspiracy received widespread circulation. "This bureau has reliable information that such [toll bridge] interests have sought to enjoin the construction of public bridges in the courts," MacDonald reported in 1928, "and they have attempted, and in some cases even succeeded in blocking legislation authorizing the construction of public bridges."31 Under the shadow of these reports, a backlash of public support against the high tolls charged at many bridges, the diminishing returns on investment of the more marginal later projects, and the virtual evaporation of capital investment money, toll bridge construction became one of the early victims of the Great Depression. Privately funded bridge building activity had all but ceased by the early 1930s.

Toll bridge construction on the Missouri River during the boom years

reflected the nationwide trend. With the exception of the wagon bridges at Fort Leavenworth, Kansas (1872), and Fort Benton, Montana (1888), highway crossings on the Missouri prior to 1920 appeared only in combination with railroad or electrical railway bridges. By 1920, ten of these multiple-use structures had been built. The automobile brought about a dramatic change in those statistics: in the five years between 1922 and 1926, ten highway bridges and one highway/electric railway bridge had been completed either by private bridge companies or - in the states with more aggressive legislatures - by the state highway departments [see Figure 2].[32] The first of these connected Bismarck with Mandan, North Dakota in 1922. Consisting of three 465-foot through truss spans, the Bismarck Bridge represented the first major state-funded bridge over the great river.

Three years after completion of the Bismarck Bridge, the North Dakota legislature made appropriations to match federal aid and local funds for the simultaneous erection of bridges over the Missouri at Sanish and Williston. Both bridges employed riveted Pennsylvania through truss spans: the Sanish consisting of four 273-foot spans; the Williston, four 315-foot spans.[33] The two structures were completed in June 1927, giving North Dakota a total of three Missouri River bridges for the decade, all built with state funds.

In 1921, South Dakota authorized a state property tax to finance construction of Missouri River bridges at Wheeler, Pierre, Chamberlain, Mobridge and Forrest City. Using a combination of state, local and federal-aid funds, the state highway department completed the bridges between 1924 and 1926 at a total cost of less than $2,000,000. Like the North Dakota bridges, all five featured Pennsylvania through trusses, varying in span length from 256 feet to 336 feet. Four used riveted construction; the Wheeler Bridge was pinned to minimize the expense of dismantling in case the state chose to replace it with a combination railroad and highway superstructure.[34]

Only a single Missouri River toll bridge countered South Dakota's state-sponsored construction program during the 1920s: the Yankton Bridge on the South Dakota-Nebraska border. Built in 1924 by the Meridan Highway Bridge Company, the bridge at Yankton was a double-track, vertical lift structure, designed to serve both highway and electric railway traffic. While a free highway bridge was sought at this location by the Nebraska resolution of 1925, the toll structure remained the only span to be erected and is still in use today.

Like South Dakota, the Missouri Highway Department in the 1920s initiated a bridge construction program so ambitious that it nearly eliminated the need for private toll bridge investment. This program resulted in the completion of four Missouri River bridges between 1924 and 1926. Three of the four bridges, located at Booneville, Glasgow and Lexington, were erected using standard falsework. The fourth structure, at Waverly, was erected by cantilevering, with only a few clusters of piles from which the cantilevers launched. Other than erection technique, all four structures were identical, employing riveted Pennsylvania through truss spans, ranging in span length from 170 to 417 feet.

LIST OF BRIDGES OVER MISSOURI RIVER
MOUTH TO FT. BENTON, MONT.
1926

LOCATION: Miles above mouth	LOCATION: Nearest town, street, etc.	OWNER	KIND (Fixed, Swing, Vertical Lift, etc.)	Number of Spans	CHANNEL SPANS: Clear width normal to channel: Left	Center	Right	Clear height Lowest point of superstructure above: M.L.W.	M.H.W.	AUTHORIZED BY LAW: Congress or State	Approved	Plans Approved by War Department	Completion Reported	Closed Periods	Purpose for which Bridge is Used
					Ft.	Ft.	Ft.	Ft.	Ft.						
1.8	Bellefontaine, Mo.	C. B. & Q. R. R.	Fixed	4	339	430	431	78.1	54.3	Congress	Feb. 17, 1888	Dec. 31, 1899	1934		Railroad
31.9	St. Charles, Mo.	Wabash Ry.	Fixed	7	309	309	310	80.9	54.9	(Charter)	May 29, 1888		1871 1934		Railroad
33.7	St. Charles, Mo.	St. L. & St. C. Bridge Co.	Fixed	4	360	413	410	70.7	34.9	Congress	June 3, 1833	Apr. 17, 1900	1303		Highway & Electric Ry.
191.3	Jefferson City, Mo.	J. C. Br. & Transit Co.	Swing	4	309		203	43.0	34.0	Congress	Jan. 9, 1933	July 28, 1833	1833		Highway & Electric Ry.
301.8	Main St., Booneville, Mo.	Public	Fixed	3	400	400	400	83.3 78.3	38.4 60.0	Congress	Aug. 23, 1831	Nov. 3, 1331	1934		Highway
203.8	Booneville, Mo.	M-K-T Ry.	Swing	7	199		139	31.0	23.3	Congress	May 11, 1378		1378 1393		Railroad
231.3	Glasgow, Mo.	Public	Fixed	3	170	330	303	38.0	33.0	Congress	June 21, 1393	Nov. 19, 1333	1333		Highway
237.1	Glasgow, Mo.	C. & A. R. R.	Fixed	3	170	313	314	90.7	93.1	Congress	Mar. 3, 1833	June 3, 1399	1300		Railroad
331.3	Waverly, Mo.	Public	Fixed	3	400		300	83.0 11.0	19.4 64.4	Congress	July 1, 1933	Dec. 33, 1933	1933		Highway
392.3	Lexington, Mo.	Public	Fixed	3	301	301	401	83.7	30.1	Congress	Sept. 23, 1382	Dec. 3, 1932	1339		Highway
380.0	Sibley, Mo.	A. T. & S. F. Ry.	Fixed	4		383		81.7	43.3	Congress	Jan. 19, 7813	Mar. 9, 1913	1383 1914		Railroad
389.3	Randolph Bluffs Kansas City, Mo.	C. M. & St. P. Ry.	Fixed	3	339	333	303	76.3	39.3	Congress	May 11, 1334		1387		Railroad
390.1	Locust St. Kansas City, Mo.	Union Depot Br. & Terminal Co.	Vert. Lift	3			305	33.3	39.0	Congress	Feb. 29, 3901	Mar. 19, 7903	1913		Highway, Electric Ry. and Railroad
399.7	Bridge St. Kansas City, Mo.	C. B. & Q. R. R.	Swing	6	300		300	30.7	20.3	Congress	July 33, 1333	June 20, 1913	1933 1891 1917		Highway & Railroad
331.3	Leavenworth, Kans.	C. Gt. Western R. R.	Swing	4	303		203	30.3	3.3	Congress	July 33, 1330	Apr. 37, 1899	1331		Highway & Railroad
434.9	Ft. Leavenworth, Kans.	U. S. (by purchase)	Fixed	3	130	393		33.3	34.3	Congress	July 33, 1333		1313		Highway
347.3	Atchison, Kans.	Atchison & Eastern Br. Co.	Swing	5	190		380	33.4	13.0	Congress	July 3, 1333		1374		Highway & Railroad
473.0	St. Joseph, Mo.	St. J. & Gr. Isld. Ry.	Swing	3	300		300	33.3	71.3	Congress	Mar. 3, 1333	Dec. 7, 1910	1371 1934 1917		Highway & Railroad
337.0	Rulo, Neb.	C. B. & Q. R. R.	Fixed	3		399	301	69.2	30.0	Congress	June 38, 1834	Feb. 35, 1337	1397		Railroad
497.7	Nebraska City, Neb.	C. B. & Q. R. R.	Fixed	3		399	314	61.0	31.0	Congress	June 4, 1873	July 3, 1327	1398		Railroad
933.3	Plattsmouth, Neb.	C. B. & Q. R. R.	Fixed	9			399	61.3	31.3	Congress	July 3, 1841	Nov. 3, 1901	1380 1933		Railroad
611.1	Pacific St. Omaha, Neb.	C. B. & Q. R. R.	Fixed	4	329	333	336	93.8	92.0	Congress	Feb. 34, 3911	May 3, 1919	1373 1397 1311		Railroad
613.3	Douglas St. Omaha, Neb.	O. & C. B. Ry. & Br. Co.	Fixed	7			337	61.9	33.4	Congress	Mar. 3, 1887	Feb. 34, 1923	1393 1334		Highway & Electric Ry.
993.3	Omaha, Neb.	Ill. Central R. R.	Double Swing	4	290	333	330	21.0	19.1	Congress	May 23, 1393	Mar. 1, 1902	1903		Railroad
994.0	Blair, Neb.	C. & N. W. Ry.	Fixed	3		331	300	92.9	33.6	Congress	June 37, 1333	Oct. 3, 1933	1333 1334		Railroad
903.7	Sioux City, Iowa	C. St. P. & O. R. R.	Fixed	4	339	333	189	40.3	33.9	Congress	Aug. 19, 3979	July 14, 3877	1333		Railroad
997.3	Elm St., Sioux City, Iowa	Mo. River Br. Co.	Double Swing	6	319		313	29.7	19.3	Congress	Apr. 39, 1999	June 36, 1990	3336		Highway & Electric Ry
937.3	Yankton, S. Dak.	Meridan Hy. Br. Co.	Vert. Lift	7	290			30.0	29.7	Congress	Nov. 3, 1330	Aug. 30, 1330	1934		Highway & Electric Ry
393.7	Wheeler, S. Dak.	Public	Fixed	3		340	330	53.0	33.0	Congress	Mar. 2, 1333	Nov. 13, 1923	1925		Highway
1037.4	Beebe St., Chamberlain, S. Dak.	Public	Fixed	6	280	336	390	66.0	31.7	Congress	Jan. 39, 1934	May 3, 1334	1936		Highway
1097.3	Chamberlain, S. Dak.	C. M. & St. P. R. R.	Swing	4			300	22.9	6.9	Congress	Feb. 9, 1993	Nov. 17, 1333	1996 1333		Railroad
1174.3	Pierre, S. Dak.	Public	Fixed	6	334		220	33.0	33.0	Congress	Apr. 17, 1934	Nov. 19, 1334	1923		Highway
1174.1	Pierre, S. Dak.	C. & N. W. Ry.	Swing	6	310		210	31.0	17.3	Congress	May 17, 1088	July 14, 3903	1907		Railroad
1339.7	Forest City, S. Dak.	Public	Fixed	6	394	310	249	33.6	33.6	Congress	May 37, 1934	Jan. 17, 1933	Under Cons.		Highway
1313.9	Mobridge, S. Dak.	Public	Fixed	4	390	310	250	32.0	33.0	Congress	Jan. 33, 1934	Apr. 13, 1324	3924		Highway
1319.3	Mobridge, S. Dak.	C. M. & St. P. R. R.	Fixed	3	409	410	410	69.4	30.4	Congress	Apr. 3, 1993	July 33, 1393	3903		Railroad
1349.3	Bismarck, N. Dak.	Public	Fixed	9	493	433		39.0	43.3	Congress	Feb. 37, 1901	Jan. 9, 1330	7933		Highway
1430.1	Bismarck, N. Dak.	Northern Pacific Ry.	Fixed	3	397	319		66.3	33.3	Congress	July 3, 3904		3993 3903		Railroad
1707.9	Snowden, Mont.	Great Northern Ry.	Vert. Lift	4			160	93.7	39.2	Congress	Aug. 10, 1313	Oct. 29, 3313	1919		Railroad
2324.9	Ft. Benton, Mont.	Public	Fixed	9	216			33.4	3.0	Congress	Aug. 6, 1931		1938 1908		Highway

Fig. 2 (from C.C. Gee, U.S. District Engineer, Kansas City, Missouri, "List of Bridges over Missouri River to Mouth of Fort Benton, Mont.," 1926.)

The Missouri Highway Department maintained its construction program to the end of the decade, erecting at least two other Missouri River bridges, at Fort Bellefontaine and St. Joseph. Like the Waverly Bridge, tbe four 444-foot Pennsylvania through trusses of the Bellefontaine Bridge were erected by means of the cantilever method. Harrington, Howard & Ash, engineers for the Blair Bridge, served as consultants on the 1929 project. A notable exception to the fairly standardized Missouri state bridges, the St. Joseph Bridge featured a 900-foot continuous Warren truss that employed silicon steel for economy. When state funds fell sbort of erection cost for tbe Missouri River bridge at Hermann, that structure was ultimately financed as a private toll venture in 1928. Among the state's four or five Missouri River toll bridges built prior to 1930, it was apparently the only privately funded structure. Featuring two 400-foot continuous Warren truss spans, the Hermann Bridge was noteworthy as the first project undertaken by Sverdrup & Parcel, another Blair Bridge participant.[35]

Nebraska and Iowa lagged hopelessly behind other Missouri River states in bridge building on the river. Devoting their efforts entirely to tributaries of the Missouri, neither state bridged the Missouri until construction of the interstate system in the 1950s. Instead, they depended on private investors to fill the need, and by 1930 a series of private toll bridges had sprung up along the Nebraska-Iowa bounded Missouri River. In addition to the bridges at Omaha and South Sioux City, built between 1888 and 1896, bridge companies erected trusses at Blair, Nebraska City and Plattsmouth in the 1920s.[36] "The public has not reached the point where it will dig down in its pockets and pay for these bridges, stated Des Moines attorney Henry Adams. "If we would have them, they must he built by private capital, and to make them free, as they should be, we must be willing to pay back this money."[37] For the residents of Blair and other Iowa and Nebraska towns, private venture remained the only feasible means of spanning the "Big Muddy."

REED O'HANLON AND THE NEBRASKA-IOWA BRIDGE COMPANY

Reed O'Hanlon understood the reality of bridging the Missouri better than most. Eldest son of Washington County, Nebraska native, Clark O'Hanlon, Sr., and Bertie Reed of Monmouth, Illinois, Reed O'Hanlon was horn in Blair, Nehraska on August 17, 1893. His father assumed prominence as a leading lawyer and political figure in Blair, a role that the boy would closely emulate in his own life.

Taking a bachelor of arts degree from the University of Nebraska in 1915, O'Hanlon joined the law practice his father had founded in 1913.[38] The following year, however, the young man was called away to the 4th Nehraska Infantry assigned to the Mexican border, returning to Blair only briefly before

the outbreak of World War I. The war claimed his services until May 1919, when he retired and returned to Blair. Admitted to the bar in 1919, Reed assumed practice as a full partner in the firm, then called O'Hanlon, Maher & O'Hanlon. In 1926, the firm became the strictly family enterprise of O'Hanlon & O'Hanlon with Reed's brother, Philip, added as a full partner in 1932.[39]

Like his father, Reed O'Hanlon took a keen interest in the affairs of his small home community of 3,000. A well-respected civic leader by the 1920s, he was appointed president of the Blair Chamber of Commerce in 1925, and Blair City Attorney in 1927.[40] The young lawyer, so industrious himself, regarded the apathy of this fellow citizens with almost self-righteous indignation, exemplified by his bristling message to the Chamber in May 1925:

> **President O'Hanlon wended his way to the head of the table after the meal was finished and made one of the best talks of the season. He deplored the lack of interest in the civic affairs of the community on the part of the men who naturally should be interested in the Chamber of Commerce and the weekly dinner and called attention to their laxness in the hope that it might be remedied.**
> **The speaker said the trouble with us seemed to be that we would start with a boom which lasted two or three years; and die out after about the fifth year. "It seems to me," said Mr. O'Hanlon, "that the Blair Chamber of Commerce has already got one foot in the grave and a small push would put the other one in." And then he went on to say that he didn't think it was the duty of the president of the organization to be the only one to attempt to do things; there should be and no doubt are others as much interested in the welfare of Blair, and if we expect to maintain our reputation as a live organization it was up to some of the members of the Chamber of Commerce to get busy.** [41]

With these words, Reed O'Hanlon set the stage for the hard-fought bridge campaign to begin two years later.

O'Hanlon assumed the responsibility of organizing a private bridge company himself, and in July 1927 incorporated the Nebraska-Iowa Bridge Company in Delaware with Omaha capitalists James T. Wachob and J.C. Rahel.[42] With the assistance of Nebraska's Representative Sears and Senator Howell, the three then petitioned Congress for a private bridge franchise. The bill, specifying the construction of a toll operated bridge across the Missouri River between Washington County, Nebraska, and Harrison County, Iowa, garnered the active support of many surrounding communities. It even drew an endorsement from the rival Omaha Auto Club. "We do not believe that a bridge at Blair will divert the general flow of traffic across the river at that point," the club stated in January 1928, "as a paved highway through Omaha from the east will be available by early summer."[43] Congress granted the franchise at the end of February. President Hoover signed it into law two weeks later. To the residents of

THE NEW BRIDGE

On the Lincoln Highway Cut-off

Across the Missouri River between Blair, Nebraska, and Missouri Valley, Iowa, uniting The Trunk Line Automobile Highway Systems of Nebraska and Iowa will put Blair and Washington Co. Neb., on

The Main Street of America

AT

The Cross Roads of the Nation

The Building of this Bridge and its connecting Hard Roads means New Wealth and Income to the Citizens of Blair and Washington County

—IT MEANS—

A labor pay roll of $250,000 in the next year on the Bridge Construction.
A labor pay roll of importance on the road construction tributary to the Bridge.
A permanent traffic income of not less than $100,000 per year when the bridge is completed next year.
Increased earnings and realty values for property owners.
Increased business and profits for Banks and Merchants.
Work for unemployed local labor.

—PUBLICITY—

The Bridge Corporation will extensively advertise ($25,000 in the bridge territory in the 800 traffic centers from which the bridge will draw its patronage.

Participation in the Profits of the Bridge

The Citizens of Washington County will be given an opportunity to share in the permanent profits of the Bridge should they so desire

The citizens of Washington County need this Bridge. Come to the Court House

In Blair on Wednesday Evening, July 25

—At 8 O'clock p. m.—

and Learn How This Bridge is to be Built and What it Means to You

The object of this meeting is to explain to the interested citizens of Washington County what the construction of this bridge and its connecting Highways mean to them. THIS IS NOT A STOCK SELLING MEETING.

Blair Chamber of Commerce

$100 Worth of Preferred Stock FREE

We want an advertising slogan to be used in our publicity campaign. We will give FREE one share (par value $100.00) 7% Cumulative Preferred Stock in the Bridge Corporation to the person mailing us a slogan that we adopt for this purpose. This offer is made to the general public. Mail your slogan to our office. You can send in as many offerings as you wish. Your slogan or advertising phrase must be in our office on or before 5 o'clock p. m. August 15th, 1928.

NEBRASKA-IOWA BRIDGE CORPORATION,
Finance and Publicity Department,
Blair, Nebraska

Figure 3 (From *Blair Tribune*)

Blair, this represented not only another critical step toward the spanning of the river, but the opportunity to recapture the Lincoln Highway, lost fifteen years before:

> **For the immediate advantages, [the bridge] will place Blair on the main thoroughfare of a transcontinental highway; it will no longer be necessary to advertise our city as being on a cut-off of the Lincoln Highway - we will be on the main road. There is no doubt that with the construction of a bridge across the Missouri River a this point the Lincoln highway association will route the road direct from Missouri Valley to Fremont, thus shortening the route fully twenty-six miles eliminating the necessity of the tourist traveling through two large cities - Council Bluffs and Omaha. To Blair it will be the difference between living on the main road or a side street.** [44]

With the obvious potential for profits, no entity was more anxious to put Blair on the transcontinental highway than the Nebraska-Iowa Bridge Company. Anticipating the passage of the bridge bill, the corporation had already lined up most of the participants to finance, engineer and construct the bridge. The directors selected established, well-known firms for each. The Jesse T. Wachob Company financed the project in its initial stages, handling the sale of bonds to various bond houses. Harry H. Polk and Company became underwriter for the bridge securities in the spring of 1928. Additional financial management was provided by Woods, Faulkner and Company, a finance banking subsidiary of the Woods Brothers Construction Company, formed by President Mark Woods and Vice President and Woods son-in-law Albert E. Faulkner.

Typical of toll bridge projects across the country, the Blair Bridge was financed by means of first-mortgage bonds; preferred stock, sold to the public; and common stock, retained largely by the project financiers. The $120,000 investment required to cover bridge construction and administrative costs represented a portfolio of 6,000 shares of cumulative preferred 7% stock at $100 per share, 5,500 shares of common stock (given free with preferred stock), 26,000 shares of no par value common stock and $650,000 of 6-1/2% bonds. With shares valued at $390,000, Woods Brothers retained control of the Nebraska-Iowa Bridge Corporation. The remaining stock, valued at $160,000, was offered for sale to the public.

The directors commissioned a survey by the prestigious firm of Ford, Bacon and Davis, specialists in toll bridge traffic engineering, to foster confidence in the bridge stock among potential investors. The results projected retirement of the preferred stock within 12 years, at which time the common stockholders would own the bridge free of debt at a selling value of $150 to $200 per share.[45]

Almost as soon as he opened offices for the Nebraska-Iowa Bridge Corporation in Blair's old State Bank Building on July 12, 1928, O'Hanlon began an aggressive advertising campaign to promote stock sales and spread the word

Figure 4 (From *Blair Tribune.*)

THE

TOLL BRIDGE INDUSTRY

(The Industry Without a Failure)

Find Us an Interstate Toll Bridge that is Not Making Money!

WE HAVE BEEN UNABLE TO FIND AN INTERSTATE TOLL BRIDGE THAT HAS BEEN IN OPERATION ONE FULL YEAR AND IS NOT MAKING A NET PROFIT. CAN YOU CALL TO MIND ANOTHER INDUSTRY THAT HAS NO FAILURES.

ONE SIXTH OF OUR NATIONAL INCOME IS SPENT FOR AUTOMOBILES. IN 1926 OUR NATIONAL INCOME WAS SIXTY BILLION DOLLARS. WE SPENT ONE SIXTH OF THE SAME FOR AUTOS AND ONE TWENTIETH, $3,000,000,000, FOR TOURING. THERE IS A SHORTAGE OF INTERSTATE BRIDGES AND TOLL BRIDGES SOON EARN THEIR COST BY DECREASING THE DISTANCE AND TIME BETWEEN TOWNS AND CITIES.

BARRONS (THE NATIONAL FINANCIAL WEEKLY) SAYS IN ITS ISSUE OF MAY 28, 1928, THAT OF MORE THAN ONE HUNDRED TOLL BRIDGES INVESTIGATED, ONLY ONE WAS FOUND THAT WAS NOT EARNING MORE MONEY THAN ITS ORIGINAL ESTIMATES.

YOU ARE OFFERED AN OPPORTUNITY TO PARTICIPATE IN THE PROFITS OF OUR BRIDGE THROUGH THE EARNINGS OF YOUR PREFFERED AND COMMON STOCK. WE OFFER OUR 7% CUMULATIVE PREFERRED STOCK ($100.00 PAR VALUE) WITH A BONUS OF ONE SHARE OF COMMON STOCK FREE WITH EACH $100.00 SHARE OF PREFERRED STOCK AT $100.00.

Blair Chamber of Commerce

The Nebraska-Iowa Bridge Corporation
FINANCE DEPARTMENT

FULL FINANCIAL INFORMATION IS ON FILE WITH THE CASHIERS OF ALL THE BANKS IN THIS TERRITORY.

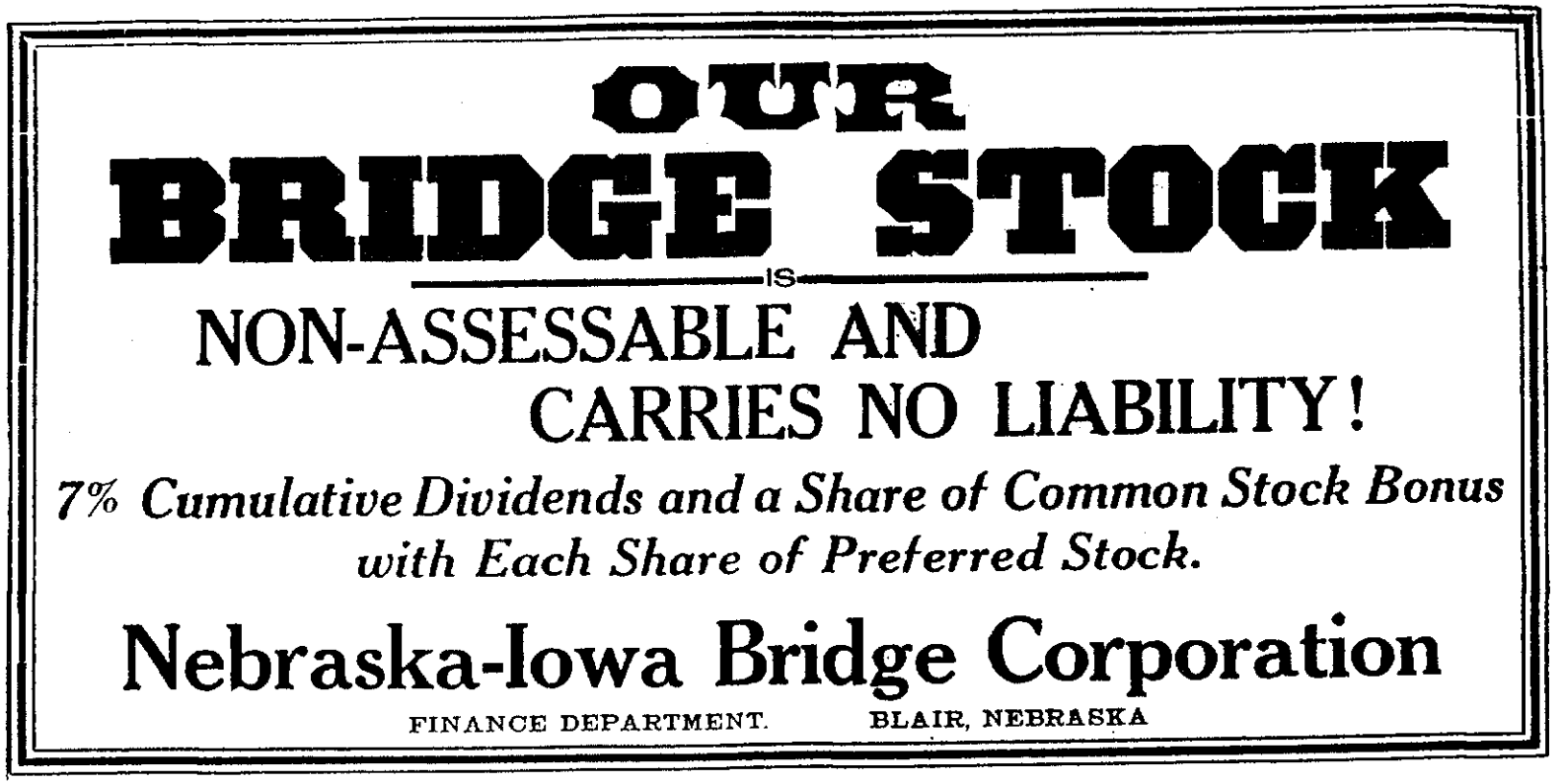


Figure 5 (From *Blair Pilot*)

of the benefits to accrue from the erection of the Blair Bridge. To direct the promotional effort, O'Hanlon bired "live wire" Joe Jinnett, a veteran of three similar campaigns for Mississippi River toll bridges.[46]

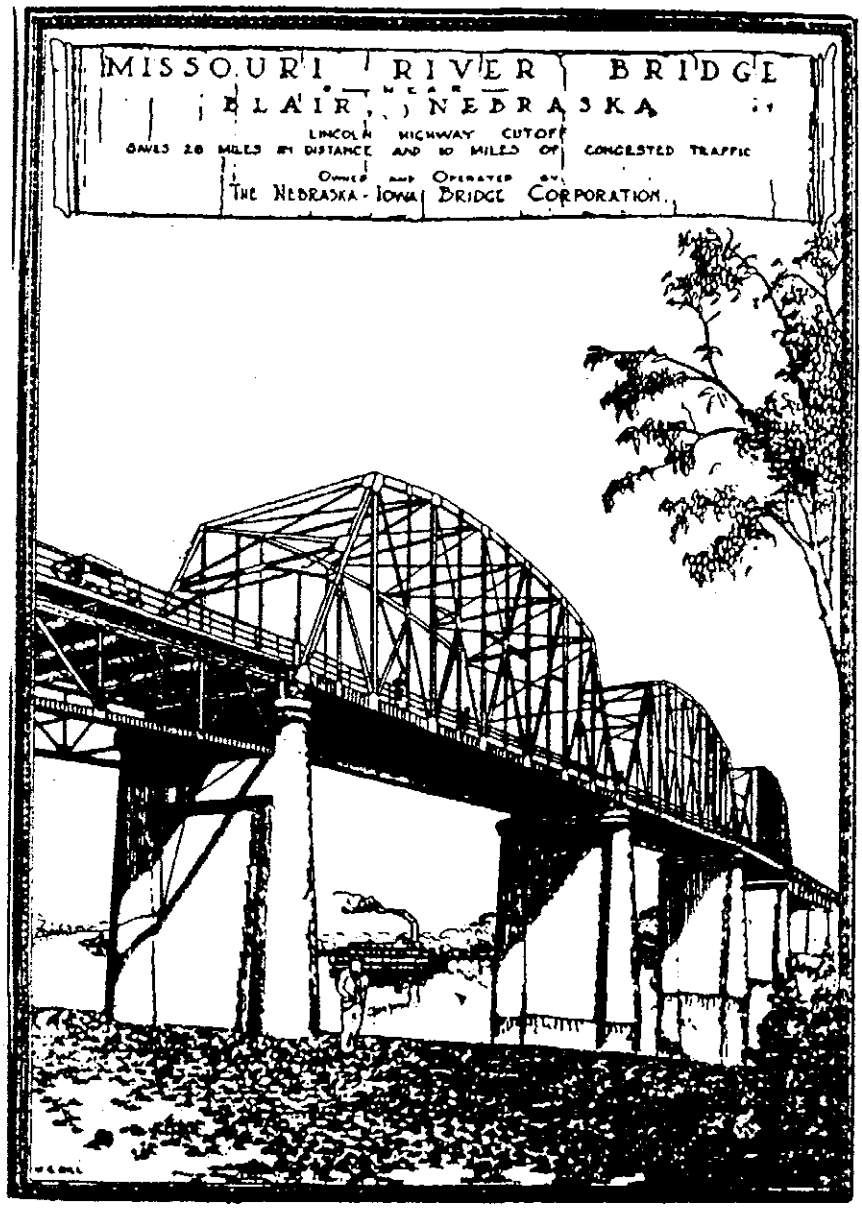
Jinnett ensured that Corporation stock sales dominated the Blair media for weeks. He began with an opening banquet, at whicb 150 guests were barraged with favorable facts and figures about the stock investment, and proceeded with an extensive four week advertising blitz in the Blair newspapers [see Figures 3-5]. To illustrate the bridge's advantages, Jinnett constantly quoted figures from other successful toll bridges, clipping articles in other newspapers for reprinting in Blair's two papers. One such example was the St. Charles Bridge, another Missouri River structure. With a construction cost of $350,000, the bridge sold in 1926 for $1.25 million. In 18 months, toll receipts exceeded $375,000, and it was expected to be returned to the state as a free bridge by 1930.[47]

One of Jinnett's more lively campaigns was a competition to name the bridge and devise a catchy advertising slogan. He offered $100 in bridge stock to the winner. The Corporation received over a bundred suggestions, ranging from the obvious to the cryptic: the Cornhusker Bridge, Corn Tassle Bridge, Nebbridgia, Nebowa Bridge, B-Line Bridge, Midway Bridge, Pride of America, U.S.A. Central Bridge, Where East Meets East, The Most Beautiful Bridge in America, and - perhaps prophetically - the Opportunity Knocks But Once Bridge. But none suited Jinnett, and he instead used a name submitted by one of the bridge company employees: "the Abraham Lincoln Memorial Bridge". Combined with the slogan, "On the Lincoln Higbway Cut-off at the Cross Roads of tbe Nation," Jinnett made the intent of the Corporation clear: the Blair Bridge would serve as a major crossing on a transcontinental route.[48]

Jinnett's nonstop campaigning paid off handsomely. Motivated by promises of lucrative gain from tbe "industry without a failure", and infused with a zealous community spirit, prominent officials and businessmen of Blair and Missouri Valley joined the ranks of Corporation stockholders. Sales were further augmented by publishing regular listings of the latest prominent stock investors in the Blair newspapers. The campaign gained momentum rapidly, and by the end of summer O'Hanlon and Jinnett had raised sufficient capital to build the bridge [see Figure 6].

To manage the construction, the bridge corporation selected Woods Brothers Construction Company of Lincoln, Nebraska - one of the most experienced construction firms working on the Missouri and Mississippi rivers. Founded in 1909 by Mark White Woods and his two brothers, Frank and George, the company by the mid-1920s managed a multi-million dollar river improvement and construction business, owned nearly all dock and wharf sites at Kansas City and controlled a prosperous shipping fleet on the Mississippi between New Orleans and Kansas City.[49] Prior to their engagement on the Blair Bridge, the Woods Brothers had completed construction of five Mississippi River toll bridges and held franchises to build toll bridges over the Missouri at Plattsmouth and Decatur, Nebraska.[50]

The civil engineers engaged for the project, the prestigious firm of Harrington, Howard and Ash, could also offer the security of extensive experience. Reputedly the largest engineering company in the West, the Kansas City-based company brought to the project considerable design experience, including fifteen to twenty bridges over the Mississippi River and six bridges over the Missouri.[51] Senior partner Marshall Howard represented HH&A at Blair as general manager and principal design engineer.



The Abraham Lincoln Memorial Bridge

Figure 6 (from *Blair Pilot*)

DESIGNING THE BLAIR BRIDGE

By the time the bridge bill became law, engineering for the structure was well under way. Finalization of plans hinged only on the selection of a bridge site. After an inspection of the Missouri at this point, the contractors established an optimal location approximately 200 feet downriver from the existing railroad bridge. The site offered two advantages: first, it constituted the narrowest crossing of the river in the vicinity; and second, it provided the intact shore protection built by the railroad company in 1882 for the original bridge. Given these factors, the savings in construction dollars far outweighed the acquisition cost for the right-of-way on either side of the river.

Nonetheless, it required two months of arduous negotiations to reach an agreement with officials of the Chicago and North Western Railway, which had acquired the Sioux City and Pacific. To assuage doubts among Blair residents that the bridge would be built, O'Hanlon solicited a letter from Howard in April announcing that an agreement had been reached. Both Blair newspapers printed the letter in its entirety:

> **...You certainly can give absolute assurance to anyone interested that the utmost progress is being made preparatory actual construction of the Blair Bridge. This past week I spent at Kansas City and Chicago directly on this matter, with the following results: the War Department has already given notice of the hearing for the location of the bridge, and this hearing will be held at Blair about May 16th.** [52]

In accordance with the CN&W agreement, the plans indicated a distance of 200 feet between the proposed bridge and the railroad structure, providing sufficient area for any repairs or reconstruction work by the railroad. To facilitate navigation on the river, the positioning of the bridge piers duplicated those of the existing bridge, as did the configuration of the structure as a high bridge with fixed spans.[53] The 1,340-foot steel superstructure consisted of three 333-foot riveted Pennsylvania truss spans - each containing fourteen panels - and a 100-foot deck truss and 70-foot steel stringer approach span at either end [see Figure 7].

The choice of simply supported Pennsylvania trusses for the Blair Bridge was hardly unexpected. Just as the pin-connected Whipple truss had been the industry standard when George Morison designed the railroad bridge in 1883, the riveted Pennsylvania (or Petit) truss was the standard configuration for long-span applications in the 1910s, 1920s and 1930s. Its name derived from extensive use in the 19th Century by the Pennsylvania Railroad, the Pennsylvania truss was patented in 1875 as a refinement of the standard Pratt truss.

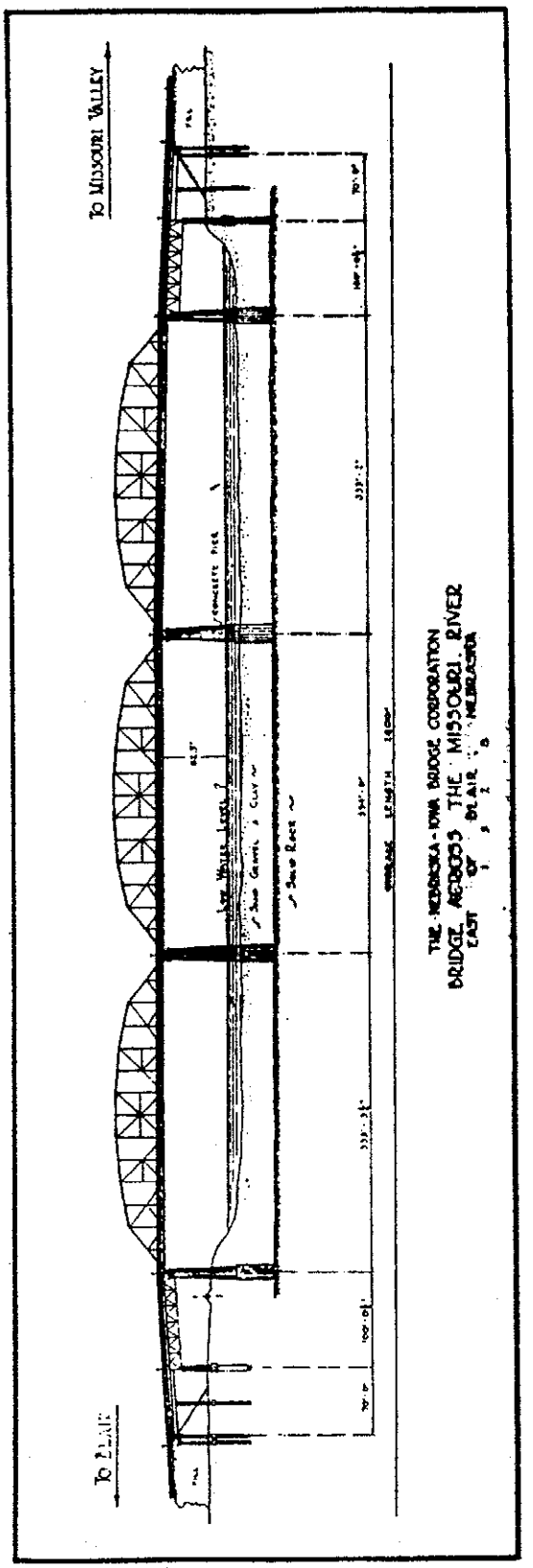


Figure 7 (from *Blair Pilot*).

Pennsylvania trusses featured vertical compression members and two-panel diagonals in tension, like the Whipple trusses they superseded. The primary differences lay in the substitution of a polygonal top chord for economy of materials and the addition of sub-struts or sub-ties. These relatively short diagonal members served to provide lateral support for the diagonals and stiffen the truss under heavy moving loads. Like most truss types in this country, Pennsylvanias were pioneered by the railroads and were later used to carry vehicular traffic.

The first polygonal-chorded bridge over the Mississippi River - the double-track Merchants' Bridge at St. Louis, completed by Morison in 1890 - was a Pennsylvania truss.[54] During the bridge boom of the 1920s, fifteen of the eigbteen fixed-span bridges built over the Missouri featured Pennsylvania trusses. Almost identical, they varied only in span lengths, which were determined largely by the spans of previous railroad bridges at those points. Morison's Whipple trusses at Blair bad been replaced in 1924 with Parker trusses fabricated by the American Bridge Company in New York.[55] With identical span lengths, pier heights, truss heights and curved upper chords, the two parallel structures at Blair presented strikingly similar profiles.

One design feature for the vehicular bridge departed significantly from the railroad structure: the center truss span had been designed on a level but the end spans featured a 2.5% downgrade toward the shore, thereby minimizing the required amount of earth fill. The sloping spans would provide a minimum vertical clearance of 52.5 feet above high water for the center truss but left a clearance of only 44.3 feet for the east and west spans. This last issue would prove problematical.

Although in favor of the location of the proposed bridge, Major Robb of the War Department immediately objected to its sloping ends at a hearing held in Blair in May. His protest was backed with written objections from the Missouri River Navigation Company and other river pilots, complaining that the west span did not provide sufficient clearance height for their vessels.[56] Marshall Howard protested, but the bridge company later conceded to the revision proposed by Robb. As approved by the War Department, the plans showed the west end on a level with the center span, while the east end dropped four feet, only half of that originally proposed. In this last detail, the height of the dropped span was apparently chosen to match the vertical clearance of the railroad bridge [see Figures 8-15].

One more hurdle aside, the bridge management rushed almost prematurely to bid construction eliciting comment from the *Blair Pilot*:

> **Work is being pushed so rapidly on the new Blair auto bridge across the Missouri that plans and specifications are not quite completed and the date set for the opening of bids is for next Tuesday, June 26th... A representative of the Wisconsin Bridge and Steel Company was here yesterday and complained that they hardly had time to do any figuring yet and were expected to have their bids in by the 26th.** [57]

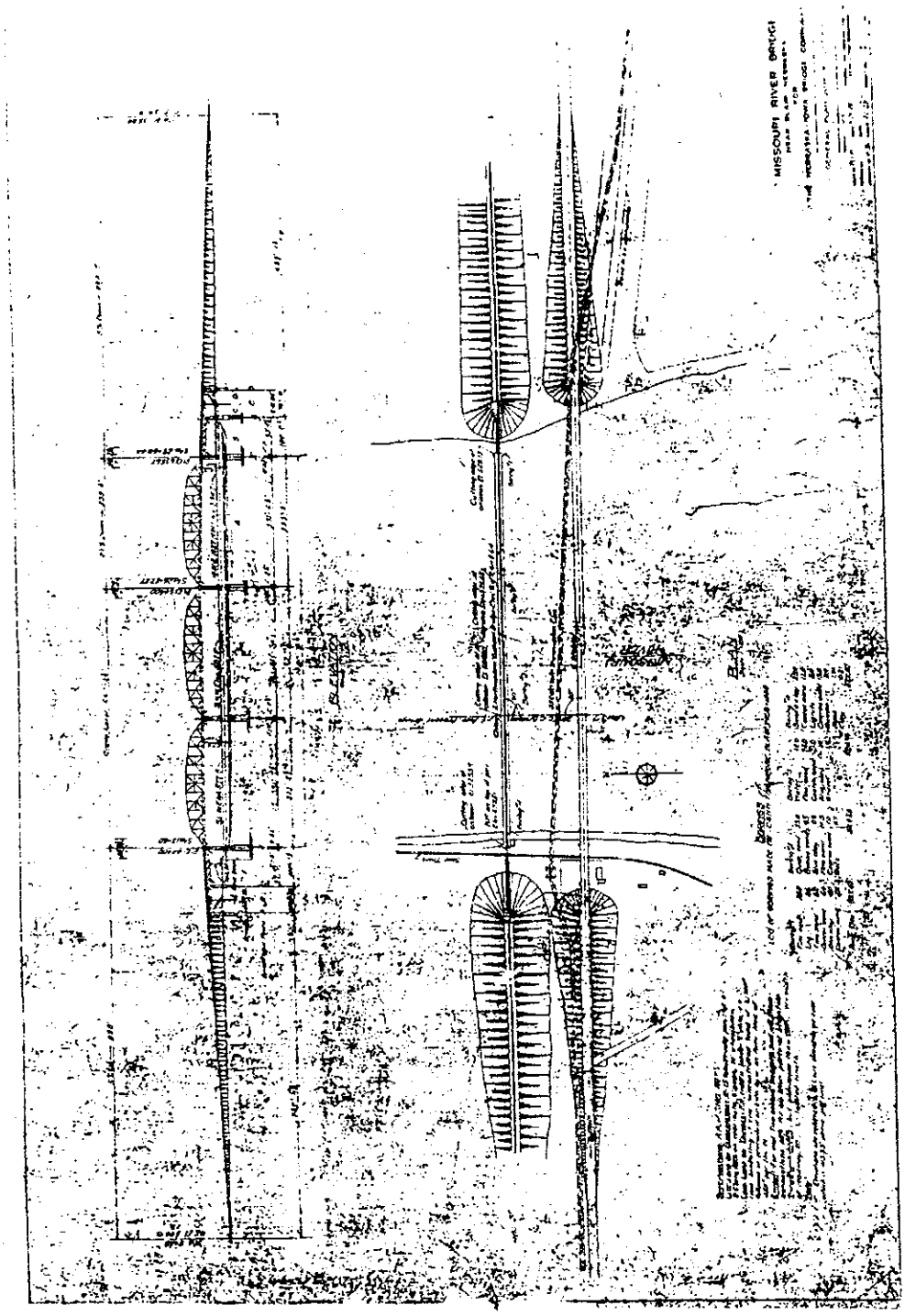


Figure 8 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

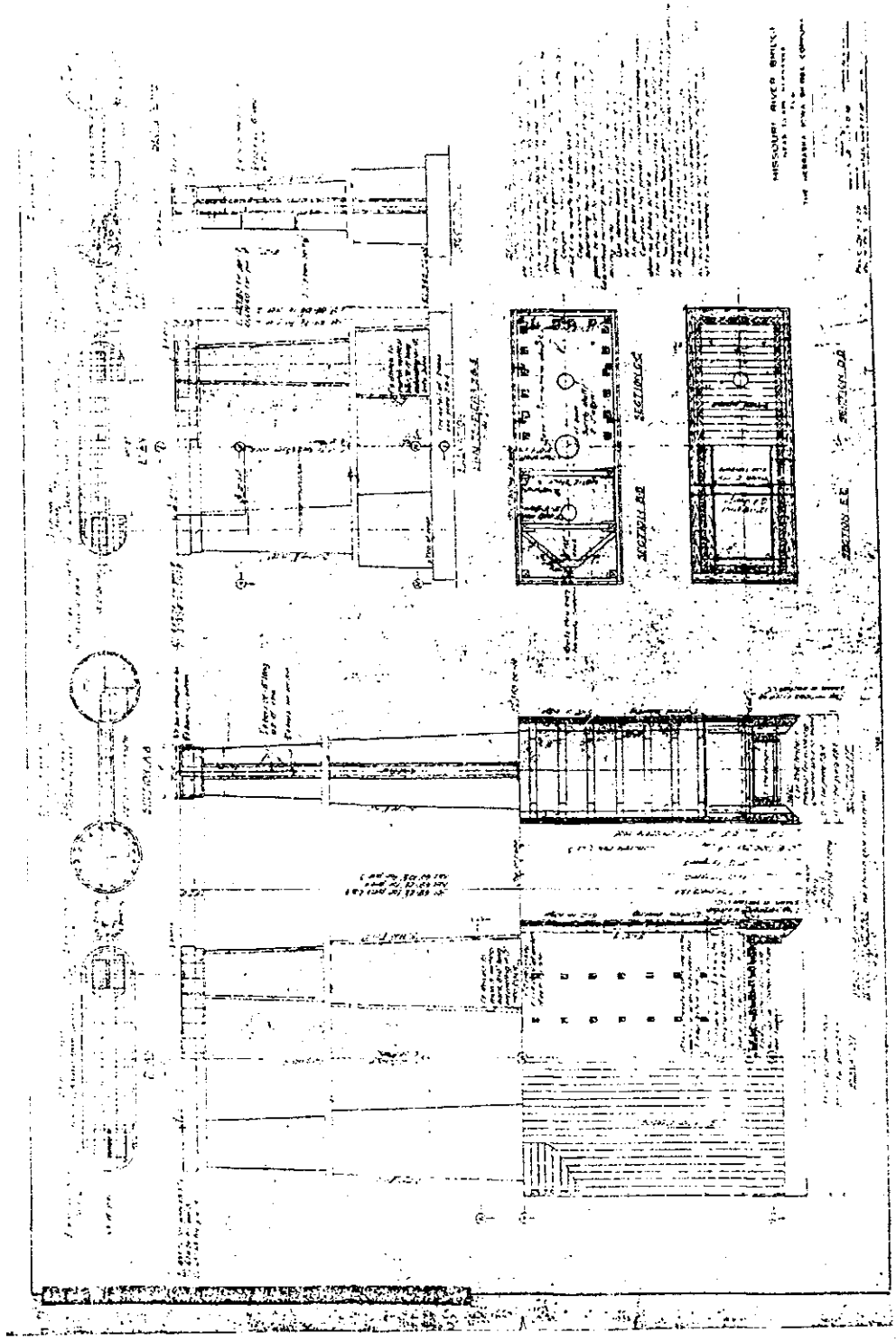


Figure 9 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

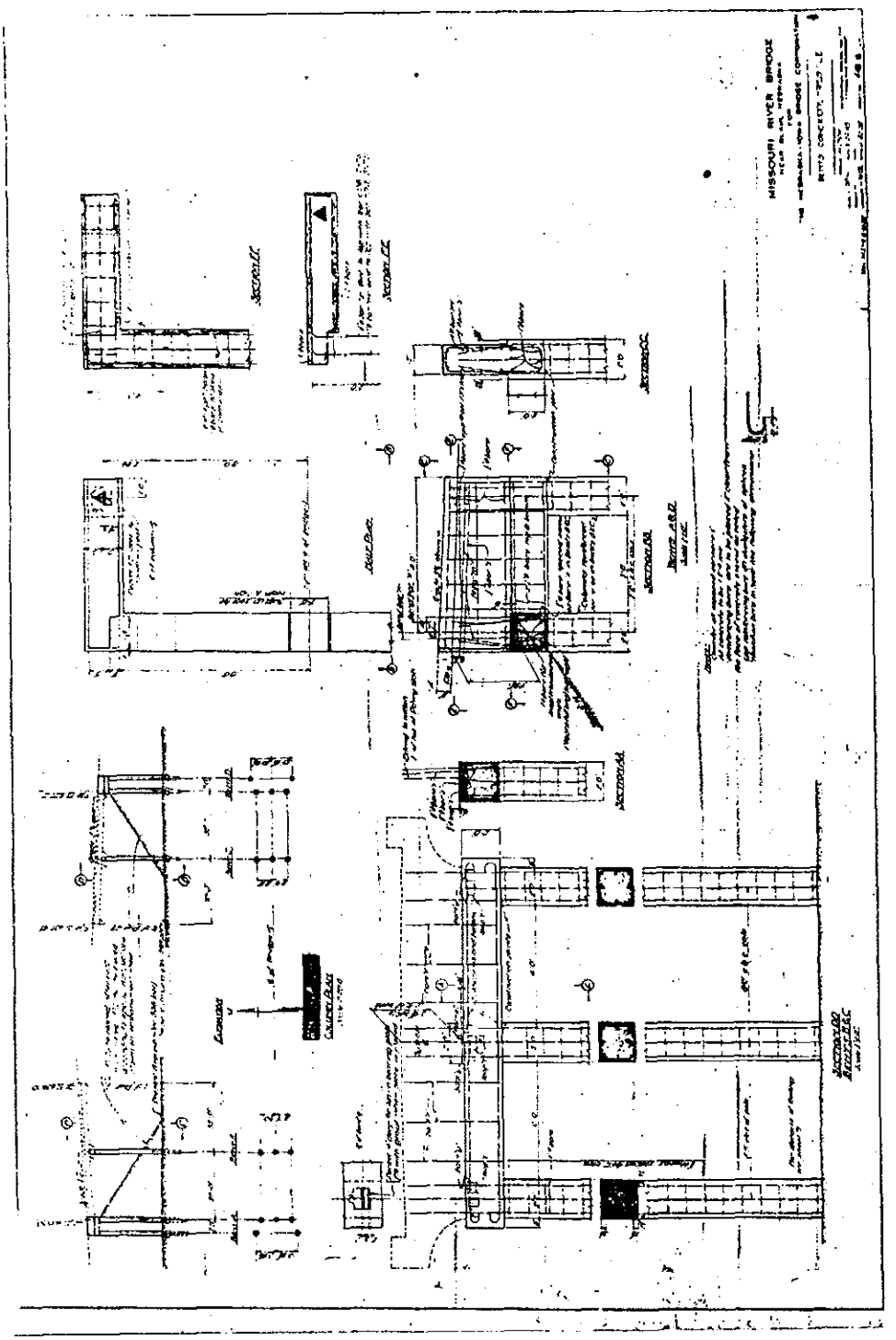


Figure 10 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

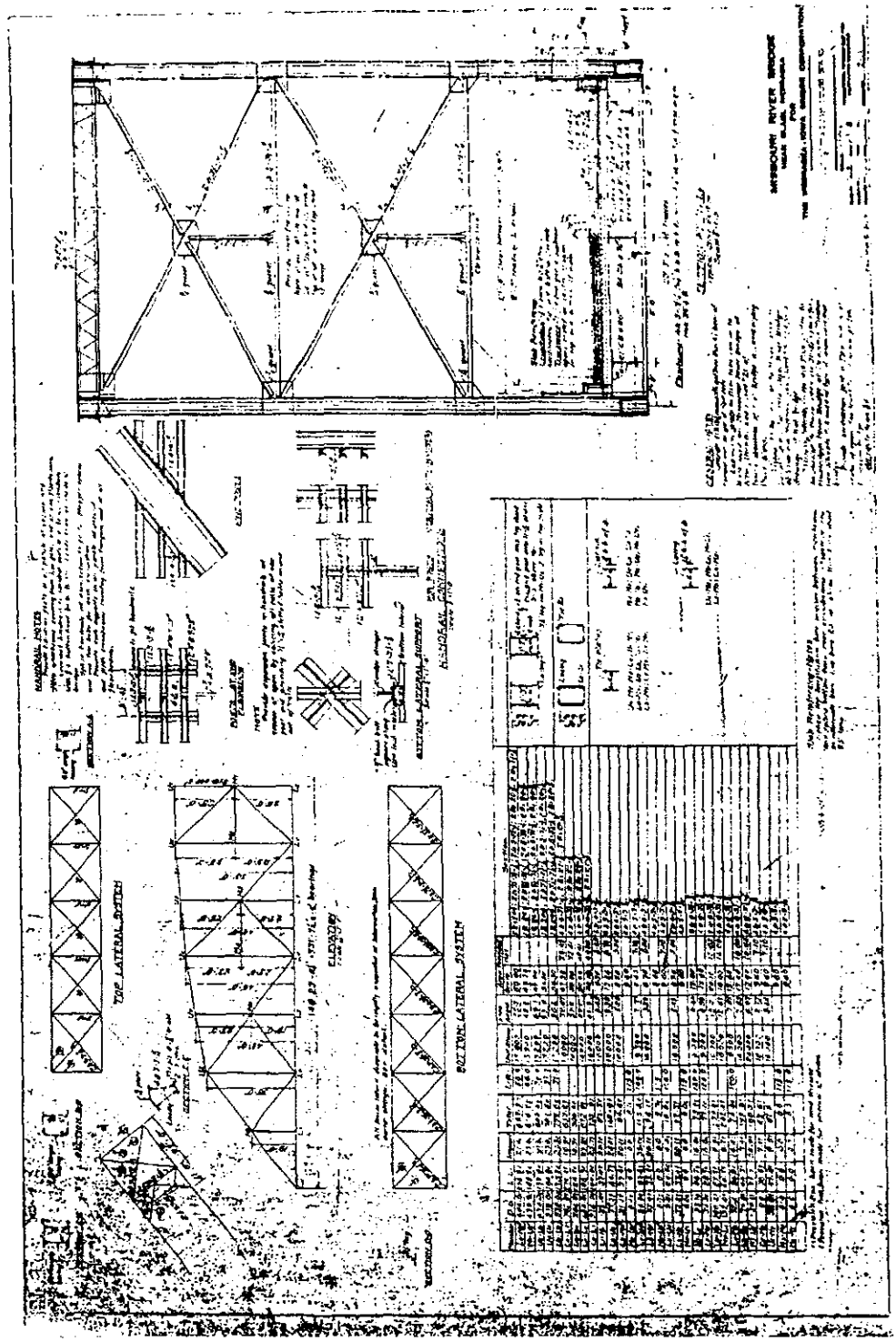


Figure 11 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

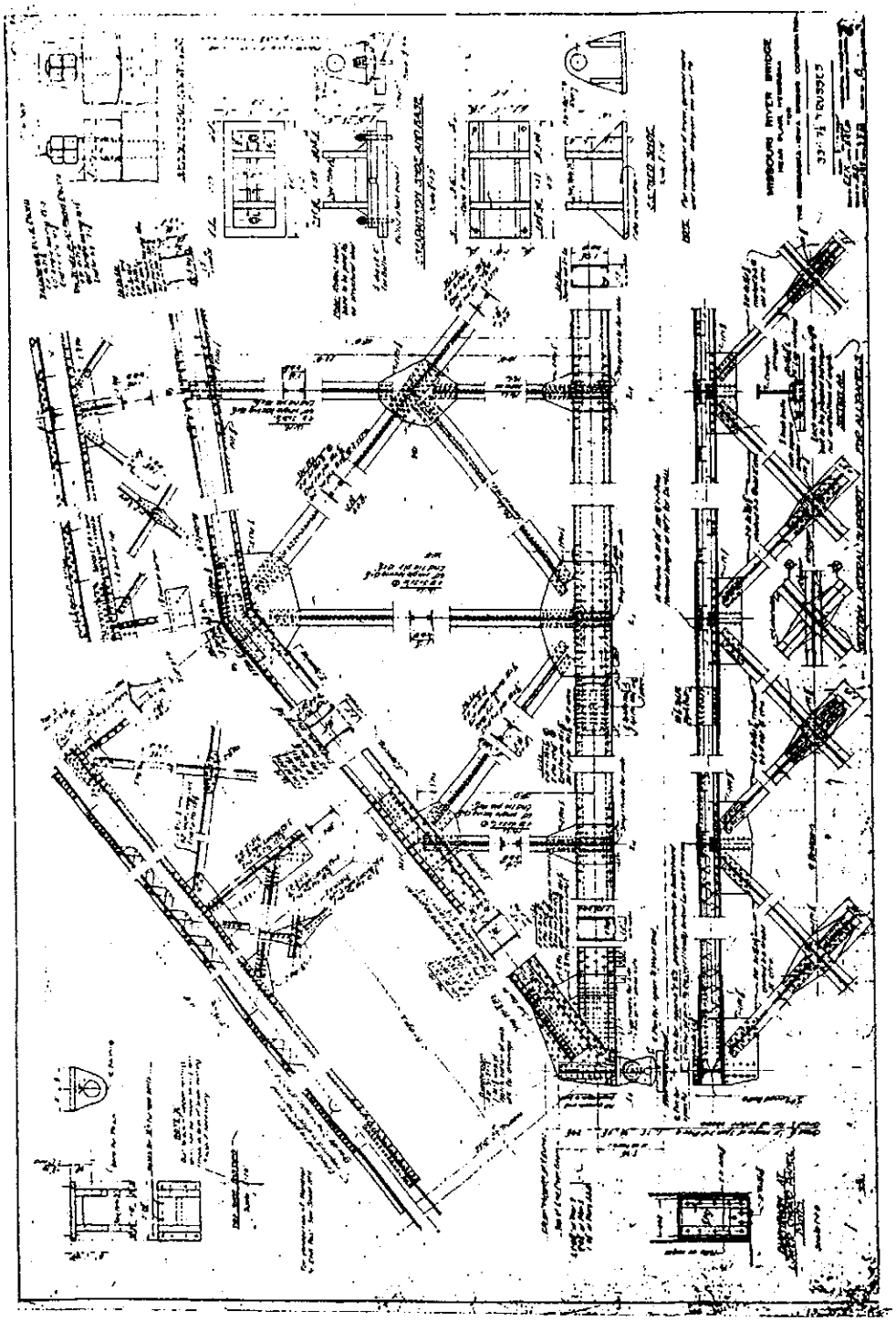


Figure 12 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

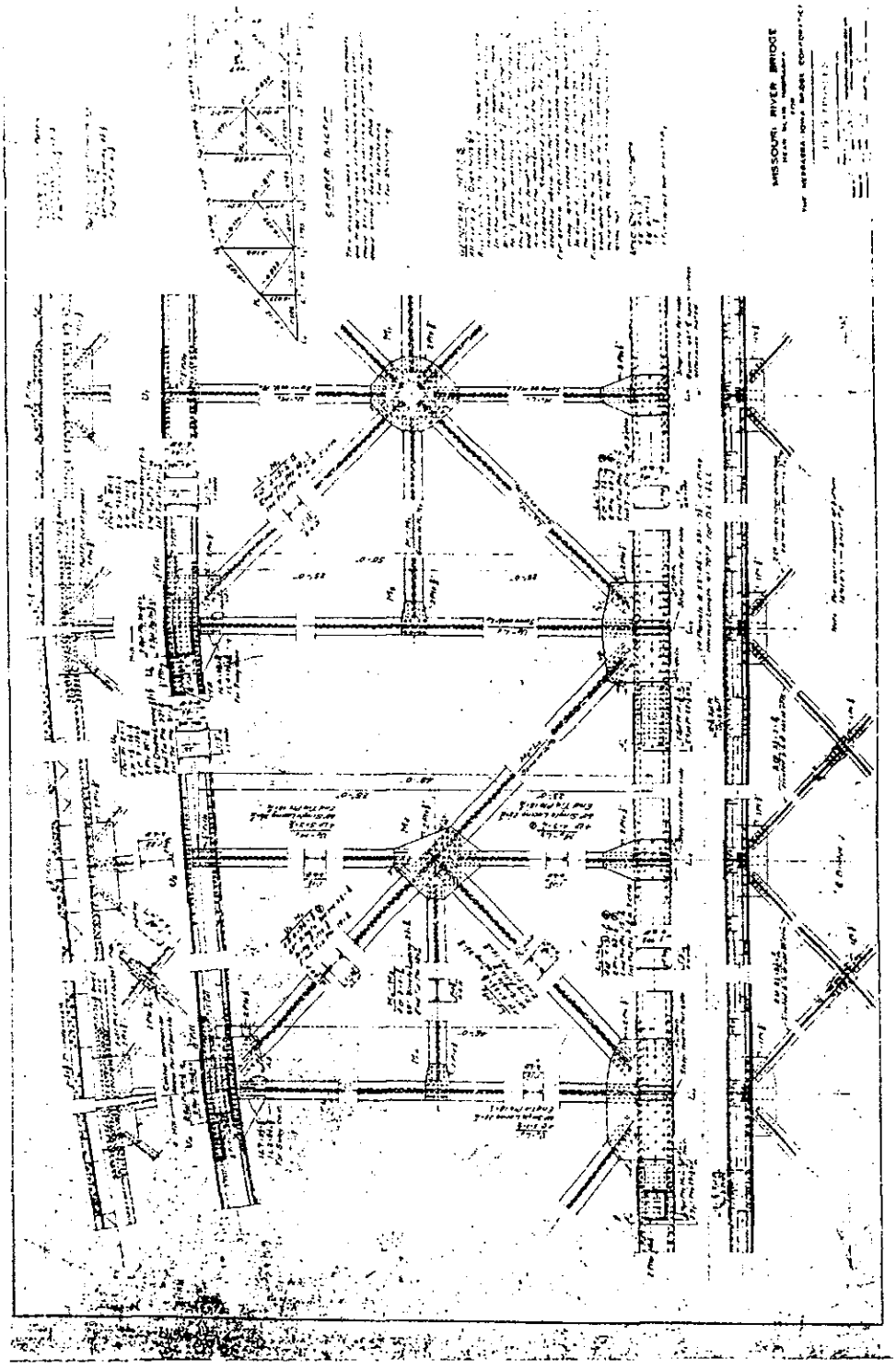


Figure 13 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

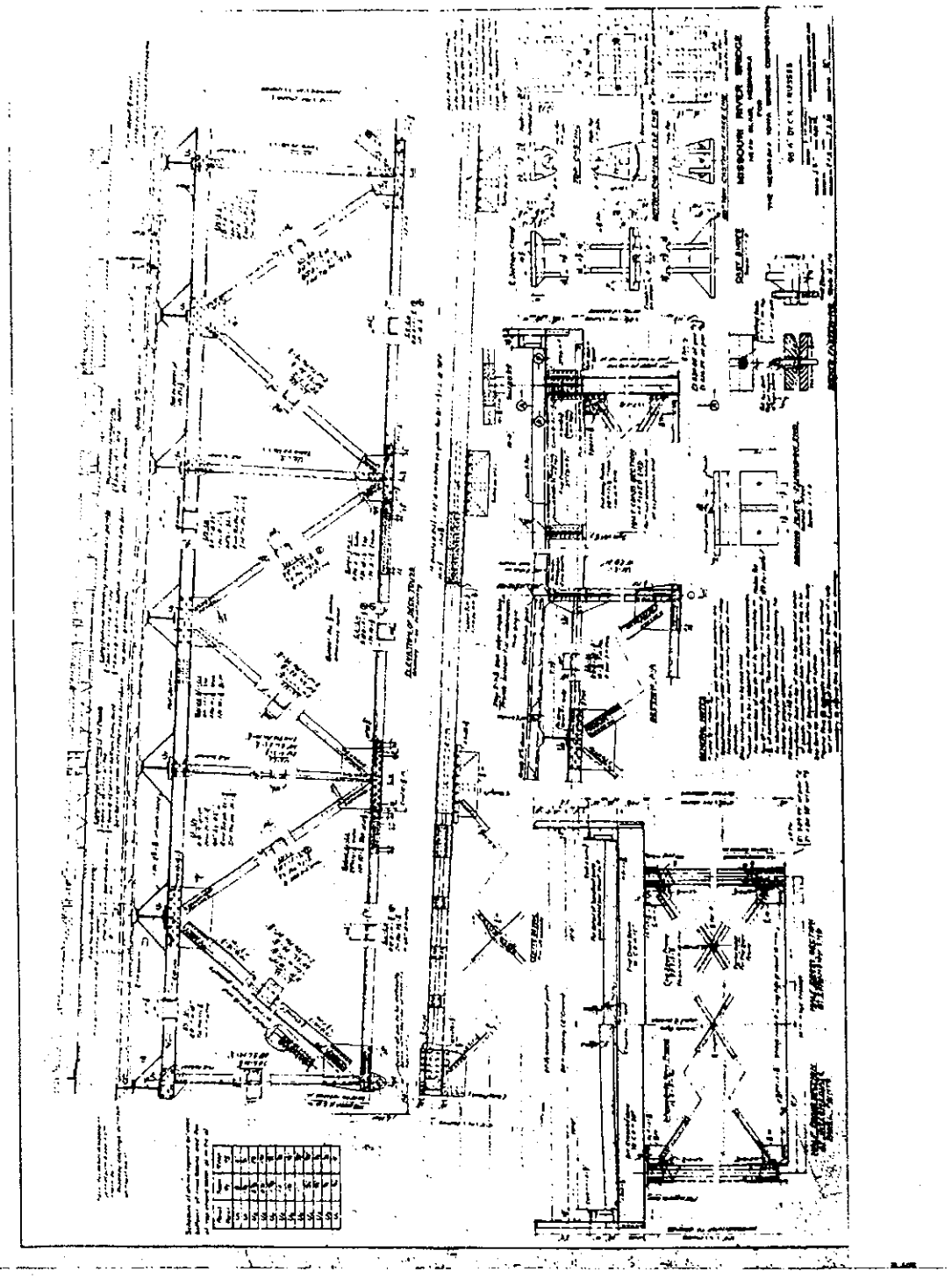


Figure 14 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

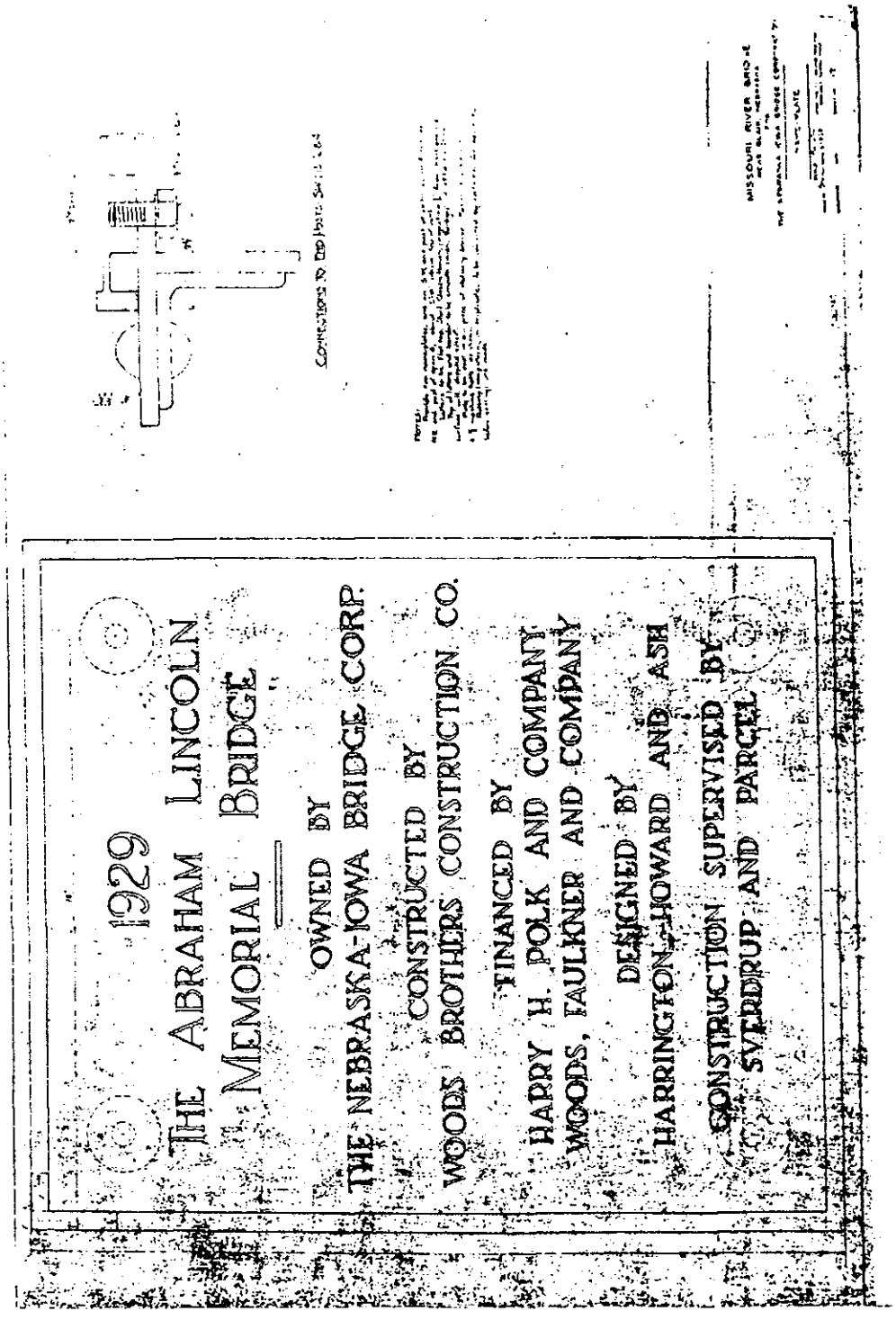


Figure 15 (from original construction drawings in Iowa Department of Transportation structure files, Ames, Iowa)

BUILDING THE BLAIR BRIDGE

Bids for the construction of the bridge were opened on schedule at the Woods Brothers Lincoln office in June. The contract for the superstructure went to the Wisconsin Bridge & Iron Company of Milwaukee, a veteran bridge firm which had just completed another Woods Brothers project: the Champ Clark Bridge over the Mississippi River Louisiana, Missouri.[58] An equally experienced Midwestern firm, the Kansas City Bridge Company, won the construction contract for the substructure.

Typical of most toll bridge projects, the financiers regarded it necessary to engage a professional engineering firm for construction supervision. To serve in this capacity, Woods Brothers signed the newly-formed partnership of Sverdrup & Parcel, based in St. Louis, Missouri. The $11,000 contract to supervise the construction of the Blair Bridge was only the second project taken on by the firm. The first had been the design and erection of the two-span continuous truss over the Missouri River at Hermann, Missouri.

Though partners for less than a year, neither Sverdrup nor Parcel lacked experience. Leif J. Sverdrup, a graduate of the University of Minnesota engineering school, functioned for several years as Chief Bridge Engineer and Assistant Chief Engineer of the Missouri State Highway Department. During his tenure there, he helped design and build such notable Missouri River bridges as the 1925 Waverly Bridge, which employed an innovative cantilever erection method, and the 1928 St. Joseph Bridge, which incorporated a 900-foot silicon steel continuous truss. John Ira Parcel, Sverdrup's professor at the University of Minnesota, brought to the partnership an international reputation as a distinguished engineer and educator. Together, the two men developed a company that would blossom from a modest bridge consulting practice to a diversified international engineering and architectural firm, known today as the Sverdrup Corporation.[59]

Sverdrup in turn engaged M.F. Duckworth, former colleague at the Missouri Highway Department, as resident engineer to supervise the construction. "I am mighty glad to know that you are on the job at Blair," Sverdrup advised in sending Duckworth, "and know that you will get along first rate. Just remember that the better you get along, the better we will all get along, and the Blair Bridge is going to be one that we can all be proud of after it is done. Your job is to see that the bridge is first class in every respect, and strictly according to specifications."[60]

The work ahead presented fewer complications than many Missouri River spans, because several of the engineering concerns had been resolved by George Morison forty years earlier on the Blair railroad bridge. To control the river, Morison had consolidated the river bank on the east and west shores. He built a dike on the east shore to constrict the river's primary channel.[61] A railroad work crew wove willow mats and anchored them to the riverbanks with

steel cables, boulders and riprap. Thus, with the extensive shore protection already in place, tbe 1928 project involved little more than the construction of the bridge itself.[62]

As the financial matters were being finalized in July 1928, a work crew from the Kansas City Bridge Company began building a construction camp on the west bank near tbe bridge site. Within weeks, the camp had mushroomed into a cluster of impromptu buildings: offices, a powerhouse, a blacksmith shop and several storage buildings. But CN&W officials soon renigged on their agreement and made additional demands on the bridge corporation. O'Hanlon countered by threatening to acquire rights by condemnation. He received a quick settlement from the railroad company in response. Relieved of this final detail, O'Hanlon declared, "the only thing that will stop the work now will be to move the river."[63]

Preliminary work included on-site assembly of the equipment required to build the piers. Workers built a 40-foot x 70-foot barge, compromised of 8-incb thick timbers with a loaded weight of 120 tons, to transport machinery and materials to the piers. For additional transportation, the men erected a tramway using 50-foot piling driven into the river bottom by an enormous pile driver on one end of the barge.

As concrete work for the first bridge pier began in August, tbe Blair Chamber of Commerce prepared for a September 8th celebration to commemorate the opening of work on the Abraham Lincoln Memorial Bridge. In conjunction with the promotional event, Publicity Manager Jinnett produced 10,000 color booklets advertising the region as the "seed corn center of the world," at "the crossroads of the Nation." (The latter slogan was in reference to the proposed junction of tbe Lincoln and Washington highways at Blair.)[64] The invitation-only party, reserved for officials from Nebraska and Iowa towns along the route of the Lincoln Highway, carried an admittedly promotional intent:

> **The real object of the gathering at this time is mostly for advertising purposes, to let the representatives of the Chamber of Commerce bodies from a wide territory around Blair know there is now actually under construction at Blair, at show them what progress has been made and to let them know about when the bridge will be completed so that traffic will be as heavy as possible from the outset... It has been found in these modern days that by such advertising the traffic will be large enough so that the bridge will start to make a profit right from the start. That is what the stockholders of the bridge want to happen here at Blair.**[65]

On the day of the bridge celebration, a crowd of over 1,000 visitors gatbered in Blair to learn of the first of a series of proposed Nebraska higbway bridges across the Missouri River. The Blair Bridge would set the precedent. It also held out the promise of better roads, a fact which clearly accounted for the presence among the guests of the Nebraska and Iowa state

engineers, each of wbom pledged the construction of good quality roads leading to the bridge. That key note was carried througb all the other speeches, indicating the urgency of the transportation issue. The Blair hosts concluded the program on a note of good will, treating guests to a barbeque, baseball game and a tour of the bridge site.

Work on the piers proceeded rapidly through August and September. By the end of August, workers had begun some of the five land piers and four river piers. About the same time, another crew cleared the way for construction, relocating the C&NW bridge foreman's house on the west bank and the higb line tower on the opposite bank, both of which blocked the approaches of the new bridge. Almost immediately thereafter, tbe crew built the west bank land piers and began the first river pier on tbe Iowa side.

Each cbannel pier was founded on a pneumatic caisson, the standard foundation type for Missouri River bridges. French for "chest", a caisson was, simply stated, an extraordinarily massive box made of timber and steel, with a cribbed roof and solid sides framing a floorless cbamber. Floated to the pier position like a cumbersome barge and filled with ballast to sink it to the river bottom, the caisson acted both as tbe permanent foundation for the pier and as a temporary work chamber for men to excavate through the riverbed to the underlying stone. Once the ponderous structure was seated on the bottom of tbe river, the chamber would be pressurized pneumatically like a giant diving bell to keep out the water, help support the roof and walls, force tbe waste materials through a pipe to the surface and provide oxygen for the "sand hogs" working in the hole.

Carpenters constructed a 37-foot x 40-foot x 8-1/2-foot deep timber caisson for eacb pier of the Blair Bridge. The barge crew launched and sunk it in place. As the concrete crew formed and poured the massive pier on the roof of the caisson to add mass and keep the top out of the water, tbe workers in the chamber below lowered the box slowly, digging first below tbe surface of the river and then further below the riverbed itself until it hit bedrock. The sand hogs hit bedrock at about 60 feet below the river surface. The men tben scored several deep notches in the rock and filled the chamber with concrete. The portion of the pier at water level was then sealed and the concrete pier built up above the water to the required beight. The work of constructing the pier went on simultaneously with the preparations for the next river pier.

To maintain the tight construction schedule, Resident Engineer Hayes of the Kansas City Bridge Company employed several crews of white and black laborers on a round-the-clock basis. When the men threatened a labor dispute over equal wages late in September, Hayes immediately dismissed the instigators and broke the impending strike. Turnover of laborers was high on the Blair Bridge, due largely to Hayes' draconian management. "Some may say Mr. Hayes is pretty hard-boiled and that his beart is harder than Pharoh's was," the *Blair Pilot* reported in October. "Others say he expects to get value received from tbe men under him so bas to fire the men wbo loaf on the job. At any rate the stockholders won't object if the latter is the case, for the bridge will be

done sooner and at less cost,"[66] Hayes replenished bis work force with a steady stream of men from Kansas City.

The first river pier was completed at the end of September. One month later, workers sealed the caisson for the second river pier and began construction on the third. Later that month, 43-year-old Jess Evan Smith slipped and fell from the framework, breaking his neck on the top of the concrete pier. He was pulled from the crib and rushed to the hospital at Blair, but died soon after.[67] Smith would be the only fatality recorded during the bridge's construction.

The third river pier was completed November 21. As construction on the fourth and final river pier foundation began, the east river pier had been completed to its full height, permitting the laying of the first steel in the superstructure. With the land piers and approach grading on either side of the river nearly completed, the steel contractor prepared to proceed with an earlier schedule. Elmer Granquist, superintendent for the Wisconsin Bridge & Iron Company, projected a completion date of April 1, 1929 - two full months ahead of scbedule, provided the substructural work could be completed by January 1.

In fact, the Kansas City Bridge crew planned to complete the bridge piers by Christmas to avoid the difficulties of winter construction. The engineers were initially concerned about the threat to the stability of the tramway and river piers posed by ice jams, but an altogether different condition - tbe shifting of the east shore pier bent - gave tbe crew its greatest problem. The necessary adjustments, involving the addition of wooden and steel piling and a concrete support, delayed the project several weeks and precluded the laying of steel at the east approach of the bridge. On January 12, 1929, workers completed the last pier. The *Blair Tribune* enthused:

> **It would be hard to find a better bunch of men on any job; there has been no discord; every fellow from Supt. Hayes down has given the best in him to the work and it has been a pleasure for our people to mingle with them on the job. Seldom will one find a gang of men who are as loyal to their "boss" as this bunch of fellows have shown themselves to be to Supt. Hayes, who had demonstrated that he understands the bridge building game by the manner in which he has completed this portion of Blair's new million dollar structure.** [68]

The city's other newspaper, the *Blair Pilot*, which had featured an earlier account of the superintendent's poor relations with the workers, took a less charitable view of Hayes:

> **He is a builder and gets the work done, but if his disposition were a little sweeter and if he would drink a few barrels of human kindness, he would enjoy life more, as well as those who are around him and have to do business with him.** [69]

Whatever the difference over personalities, the papers could not argue over the immediate the benefits to Blair: a payroll of $200,000, much of it left behind in city businesses, and a timely schedule for the opening of the Blair Bridge.

With the piers well under way, the Wisconsin Bridge and Iron Company could begin erecting the superstructure from steel components shipped to the site by the railroad carload. The steelworkers completed the west deck span first in November.[70] The crew then began work on the westernmost through truss, using a hoisting engine and derrick equipped with a 117-foot boom. The men assembled four panels at a time at river level beneath the bridge location and hoisted them into place in one piece, with steel bent supports from underneath laid on 60-foot piling driven between the piers. Work progressed in this manner as the machinery moved along the entire length of the bridge until all of the structural steel had been laid. Once the steel for one span was set in place, a riveting crew replaced the temporary construction bolts with heavy steel rivets. This completed the steel work on the truss.

Wisconsin Bridge maintained a steady construction schedule, despite the ice formation on the river. The men started construction of the first river span immediately after finishing the west deck truss, but halted in mid-February to await the spring ice break-up. The steel crew resumed its work the following month, completing the first overhead truss in late March. Falsework for the second river span was destroyed twice by ice jams, delaying the completion of that span until early in May. The men completed the last river span two weeks later. The construction of the deck truss and stringer approaches at the east end of the bridge - the final segment of steel work - required only three additional weeks to complete.

As the last pieces of steel were riveted in place, the Beaty Contracting Company of Blair began laying the eight-inch reinforced concrete deck. Fine spring weather allowed the men to form and pour concrete without delay until the end of June. With the installation of a toll booth at the north end of the bridge, the first modern Nebraska-Iowa highway span - completed at a cost of $921,260 - was opened to traffic June 28, 1929.[71]

OPERATING THE BLAIR BRIDGE

The Iowa and Nebraska highway departments began rebuilding several miles of the B-Line Highway in spring 1929 to connect with the new bridge. In Nebraska, reconstruction focused on providing a more direct route between Blair and Fremont, where the B-Line joined the Lincoln Highway. To accomplish this, Beaty built a new segment of the highway - including six new bridges - early in 1929 under contract with the Nebraska Highway Department. The segment between Fremont and Arlington was shelved for later consideration. Additional work

involved graveling between Kennard and Blair and surveying the road between Blair and the bridge, a yet undesignated section of the B-Line.[72] While not quite as extensive, similar highway improvements were required on the Iowa side of the river. The primary work, commenced just prior to the opening of the Blair Bridge, included reconstruction of a flood-prone segment east of the river and paving the route between Missouri Valley and the bridge.

The highway route through the city limits of Blair presented the biggest dilemma in the road building project. The Blair Chamber of Commerce and the City Council began to study the problem early in 1928, identifying Lincoln and Washington streets as the most viable alternatives. After circulating several proposals, a highway department finally decided tbe matter a year later: the route would enter Lincoln Street from the east as the cheapest alternative. The highway would enter the city on east Lincoln Street, turn north on Eighth Street for one block, and continue west on Washington Street, where it joined the existing route of the B-Line Highway enroute to Fremont.[73]

The bridge now opened to traffic, the townspeople of Blair began planning an elaborate dedication celebration to be held on July 26tb. In addition to an $8,000 program sponsored by the Nebraska-Iowa Bridge Corporation, the Blair, Fremont and Missouri Valley Chambers of Commerce planned a joint celebration of their own. While the actual dedication ceremony at the bridge was to be a sober affair featuring a slate of prominent speakers, the civic committee visualized a celebration more closely resembling a carnival. Toward that end, the Blair Chamber of Commerce hired St. Louis promoter, Anthony A. Buford, to design and advertise the event, described as "a monster Fourth of July celebration, with bands, free acts, outdoor hippodrome, concessions of all kinds, and a big free street dance in the evening."[74] Blair promoters hoped to garner favorable publicity from the numerous national press and motion picture representatives covering the event, and, additionally, realize a handsome profit from an expected crowd of 25,000 to 35,000 people.

On the morning of the auspicious day, visiting dignitaries gathered at Reed O'Hanlon's house and were chauffeured to the bridge "in the largest parade of Buicks ever assembled in Blair."[75] The dedication ceremony commenced at 11 a.m., when a pageant of young girls representing various Nebraska and Iowa communities met at the center of the bridge, symbolizing the closer relationship between the two states. Nebraska Governor Arthur J. Weaver and Iowa Governor John Hammill followed with the formal dedication of the bridge at center span. "While airplanes zipped and zoomed above them, the two governors shook hands," according to the *Omaha Bee*.[76]

Two thousand cars then passed over the bridge without charge to Young's Grove on the Iowa bank. The speakers program there constituted the most popular and publicized segment of the event. Mark Woods could not attend the ceremony, but Reed O'Hanlon represented the Corporation, saying, "The opening of this bridge is as important as the building of a new railroad was a generation ago. Because it is the dedication of the first bridge to be built

between Nebraska and Iowa for many years, this is, indeed, a day long to be remembered."[77] The governors of Iowa and Nebraska viewed the occasion as an opportunity to cement the relationship of the neighboring states. Stated Hammill:

> **[The bridge's] simplicity, grandeur, beauty and strength impresses one with its magnitude and greatness. Here you have a monument to the enterprise and co-operation of the citizens of two great neighboring states. It is another lesson for the people of the value of co-operation in industry, financed and agriculture. The men who make an investment of this kind are entitled to have their money returned with a fair rate of interest. To do otherwise would be to create an unsound financial policy. This bridge is not alone a new connection for two great states, but a new connection for all the people of the United States. It's a big stride in transportation progress.** [78]

Weaver agreed, saying:

> **Other bridges will be built, and ultimately all will be free as the roads that lead to them. They must all be free as soon as practicable, and the public should approve as sound any state and national policies which will accomplish this desired result.** [79]

With these words, Weaver acknowledged his support of the private bridge franchise: a keystone in Iowa and Nebraska highway transportation for years to come. The balance of the day was devoted to speechmaking, entertaining the distinguished guests and celebrating in the streets of Blair until midnight. A good time was had by all. All except Charley Haynes, that is:

> **The importance and progress in the world of transportation was set out in a colorful, although rather pathetic, contrast in the midst of the ceremony. For 17 years Charley Haynes has operated a ferry at the point where the new bridge is located. Friday the old paddle wheel of the faithful ferry splashed a mournful dirge as it pushed Charley and his craft through the muddy waters. Like the horse when the automohile came along, Charley and his ferry were retired. "I've made a living off that ferry for 17 years," he said, "and for the past three years I've done right smart well. I can afford to retire. I'm not rich hy any means, but I've got enough to get along comfortably for the rest of my days."** [80]

From a promotional standpoint, Blair's bridge dedication came off as a whopping victory. In terms of attendance and profitability, however, the success of this big celebration was debatable. A disappointing turnout of between 3,000 and 10,000 people, combined with cheap and mundane carnival attractions, lead the editor of the *Blair Enterprise* to conclude, "the

enthusiasm which the promoters had hoped to bring about by over-estimated claims did not materialize and in reality the affair was a 'flop.'" [81]
The editor of the *Tribune*, on the other hand, chose to disregard the bad side, emphasizing the favorable publicity engendered by the event, the value of which could not "be estimated in dollars and cents." In fact, it was just such publicity that bridge promoters hoped to convert into dollars and cents at the toll booth.

Toll charges for the bridge were initially set at 60 cents for auto and driver, 10 cents each for passengers and ranged from 60 cents to $2.50 for trucks, depending upon weight. After traffic totals rose over the first month from 189 the first day to 9,100 the day preceding the dedication, the bridge corporation reduced auto tolls to 50 cents, passenger tolls to 5 cents, and made a similar reduction for truck tolls.[82]

To further maximize toll revenues, the bridge owners purchased the Blair ferry franchise from Haynes, who had threatened to provide service at lower rates than the bridge toll charges. The $2,000 bargain signaled an end to Haynes' ferry business and, more significantly, to an era of Missouri River sternwheelers at Blair.[83]

The monopoly held by the bridge owners on Blair highway traffic generated sufficient returns during the first two months of operation: $5,560.71 in July and $6,151.35 in August. Over the next several months, however, poor road conditions and the absence of tourist traffic cut toll revenues sharply: approximately 50% in September and October and an even more between November 1929 and April 1930.[84] May revenues climbed to $3,918.95, and Corporation officials remained optimistic for a more remunerative return in June. Far short of the estimated annual return of $38,046.20, revenues remained insufficient to justify the payment of first annual dividends to the stockholders. O'Hanlon responded to stockholders' complaints with characteristic confidence:

> **Considering the adverse highway conditions which confronted us all of last year, together with the heavy expenses incident to opening the bridge, I feel that our first year of operation has been very satisfactory for a new enterprise and the steadily increasing traffic of this year justifies the statement that the end of the second fiscal year should find the corporation showing a substantial profit.** [85]

There was little question to the investors that profitability hinged on improved road conditions and broader bridge advertising. Because of extensive reconstruction along the Lincoln Highway on either side of the river, the shortcut value of the B-Line route during that first year was questionable. Further, Omaha-Council Bluffs promoters staged a counter advertising program with billboards posted along the length of the highway. But eventually the Lincoln Highway was rerouted and redesignated as U.S. Highway 30. Business on the Blair Bridge improved steadily in subsequent years as a result. The Iowa

and Nebraska highway departments completed most of the road work during the early 1930s and had paved the entire route from Missouri Valley to Fremont by the end of the decade.[86]

In August 1932, the Woods Brothers relinquished all interest in the Nebraska-Iowa Bridge Corporation, having reclaimed their entire investment in the bridge. Reed O'Hanlon stayed on as president of the corporation, a position he retained until its dissolution thirty years later.

By the mid-1940s, the Nebraska and Iowa highway departments began seriously to consider joint acquisition of the Blair Bridge. To define procedures for the transfer of title, an agreement between the Nebraska-Iowa Bridge Corporation and the two states was drafted May 9, 1946. That agreement extended the corporation's franchise to operate and maintain the bridge until November 1, 1962, the latest date that the states could assume control of the structure for toll-free use.

In ensuing years, Nebraska and Iowa officials realized that neither the federal legislation nor the states' agreement adequately addressed the issue of bridge maintenance and repair prior to state acquisition. Consequently, an agreement to implement a four-point maintenance program was drawn up among the three principal parties in 1956. The plan specified the reconstruction and extension of the east and west steel I-beam approaches, replacement of the old concrete deck with a steel grid floor, and painting of the steel superstructure with aluminum paint. By agreement, a maintenance program was commenced the following year with the reconstruction of the west approach and concluded five years later with the painting. When the states of Iowa and Nebraska took title to the bridge in September 1962, they praised the painstaking efforts of the Nebraska-Iowa Bridge Corporation and its long-time director:

> **The Nebraska-Iowa Bridge Corporation, largely in the person of Mr. Reed O'Hanlon, Sr., President, felt that the Corporation was morally, even if not legally, obliged to place the bridge in as good a condition physically and structurally as could be done reasonably and without excessive extension of the time beyond which the bridge would have been conveyed to the two states under a literal interpretation of the agreement. Consequently, through his sincere and wholehearted cooperation, the bridge will come into the possession of the two states in as good as condition as can be attained for a structure of its design and age. All this at the expense of less than one year more of time than was contemplated at the time the agreement was made on May 9, 1946 and at expense of about four years of sometimes intense and bitter local criticism for holding the bridge under toll for the additional time in order to pay for the improvements required to place the bridge in that condition.**[87]

With the collection of the last toll at noon on Saturday, September 29, 1962, the Blair Bridge was opened to free travel. Blairites celebrated the following week with a "Cross the Bridge" promotion, featuring three days of

merchants' specials. The only sour note of the occasion was the loss of the bridge lights, deemed unnecessary by the Iowa Highway Commission, the autbority responsible for the maintenance of the bridge. In fact, their removal brought unexpectedly widespread protest from local residents, boat operators and airplane pilots who had come to rely on the bridge as a kind of beacon.[88] In the end, the Iowa officials restored the lights of the Blair Bridge - a shining beacon of free transportation for the next generation.

ENDNOTES

1 Edith L. Neal, *Blair - 1869-1969*, n.p., n.d.

2 Grenville M. Dodge, *How We Built the Union Pacific Railway* (Council Bluffs, Iowa: Monarch Printing Company, ca. 1911; reprinted in 1965 by Sage Books, Denver Colorado). pages 34-36.

3 Octave Chanute and George S, Morison, *The Kansas City Bridge* (New York: D. van Nostrand, 1870), page 19.

4 *Blair Pilot-Tribune*, 25 July 1929, page 12.

5 George S. Morison, *The B.C. Bridge*, (n.p., 1886), page 1.

6 George S. Morison *The B.C. Bridge*, page 9; "The Blair Crossing Bridge," *Engineering*, 2 September 1887.

7 Forrest B. Shrader, *A History of Washington County, Nebraska* (Omaha: Magic City Printing Company, 1937), page 311.

8 *Washington County, Nebraska History* (Ft. Calhoun, Nebraska: Washington County Historical Society, 1930), page 14.

9 *Blair Tribune*, 12 November 1925, page 1.

10 *Blair Tribune*, 3 December 1925, page 1.

11 *Blair Tribune*, 11 March 1926, page 1.

12 *Blair Tribune*, 17 December 1925, page 1.

13 In 1923, the state of South Dakota inaugurated a tax-funded bridge program

which resulted in the erection of Missouri River bridges at Wheeler, Pierce, Chamberlain, Mobridge and Forrest City. J.E. Kirkham, "Five Missouri River Higbway Bridges in South Dakota," *Engineering News-Record*, 5 May 1927.

14 *Blair Tribune*, 29 April 1926, page 1.

15 *Blair Tribune*, 24 February 1927, page 1.

16 *Blair Tribune*, 7 April 1927, page 1.

17 *Blair Enterprise*, 21 July 1927, page 1.

18 Robert G. Athearn, *Union Pacific Country* (New York: Rand McNally & Company, 1971), pages 335-36.

19 One of the earliest of these was the bridge over the Susquehanna River at Harrisburg, Pennsylvania. At that point, the road between Lancaster and Carlyle converged with the road which extended northwest from Lancaster. When the state balked at the estimated $200,000 cost of a bridge, several local investors organized a bridge company and contracted with Theodore Burr to construct a timber truss for $192,138. The company was unable to raise sufficient capital through sale of common stock, however, and the state granted it a perpetual franchise to operate the Harrisburg Bridge and purchased sufficient stock to complete the financing. Opened in 1817, the bridge was continuously operated as a toll facility with a 4% annual return on investment.

20 Other private bridges that soon followed were:

Clarks Ferry	Susquehanna River PA
Harrisburg	Susquehanna River PA
Carquinez	Near San Francisco CA
Dumbarton	San Francisco Bay CA
Antioch	San Joaquin River CA
Gandy	Tampa Bay FL
Peace	Niagara River, Buffalo NY
Mobile Bay	Mobile Bay, AL
Ambassador	Detroit MI
Columbia River	Longview WA
James River	Virginia
Paducah	Ohio River KY
Vicksburg	Mississippi River MS
Bellefontaine	Missouri River, St. Louis MO
Chain of Rocks	Mississippi River, St. Louis MO
Cape Girardeau	Mississippi River MO

Cairo	Mississippi River IL
Sandusky Bay	Sandusky Bay OH
Mount Hope	Providence RI
Tacony-Palmyra	Delaware River, Philadelphia PA
Bay Bridge	San Francisco CA
Point Pleasant	Ohio River WV
St. Mary's	Ohio River WV
Fort Steuben	Ohio River OH
Madison	Ohio River KY
Longview	Columbia River WA

Frank M. Masters, "Toll Bridges During the Past Decade," *Engineering News-Record*, 5 February 1931, page 229.

21 "Toll Bridges During the Past Decade," page 228; "Some Thoughts on Toll Bridges," *Engineering News-Record*, 19 July 1928, page 83.

22 Paul K. Schuyler, "Toll Bridges in Operation Total 296," *Engineering News-Record*, 4 December 1930, page 880.

23 *Barron's*, 29 May 1928.

24 "Toll Bridges in Operation Total 296," page 880.

25 "The Toll Bridge Menace," *American Highways*, April 1927, reprinted in *Arizona Highways*, June 1927, pages 5-6.

26 "MacDonald Raps Billboards and Toll Bridges in Report," *Arizona Highways*, January 1929, page 15.

27 "The Toll Bridge Menace," pages 5-6.

28 "The Toll Bridge Menace," pages 5-6.

29 "Major Highway Bridges," *Engineering News-Record*, 19 July 1928, page 83.

30 "Toll Bridges During the Past Decade," page 228.

31 "MacDonald Raps Billboards and Toll Bridges in Report," page 15.

32 C.C. Gee, U.S. District Engineer, Kansas City, Missouri, "List of Bridges over Missouri River to Mouth of Fort Benton, Mont.," 1926.

33 Clifford Johnson, "Missouri River Highway Bridges in North Dakota," *Engineering News-Record*, 15 September 1927, pages 426-28.

34 J.E. Kirkham, "Five Missouri River Highway Bridges in South Dakota," *Engineering News-Record*, 5 May 1927, pages 736-40.

35 In fact, Sverdrup and Parcel formed the partnership in anticipation of the design contract for this bridge.

36 Interview with George Schmidt, Nebraska Highway Department, Lincoln, Nebraska, 9 February 1987.
Designed by Sverdrup & Parcel in 1929, the Nebraska City Bridge featured two 405-foot continuous Warren truss spans, nearly identical to the bridge at Hermann, Missouri. Built under the authority of the Waubonsie Bridge Company, a local group of businessmen formed specifically for the construction and operation of the toll bridge, the project was modeled closely after the Blair effort. The Woods Brothers Company assumed management of the $950,000 bridge and, as in Blair, turned it back to the bridge company a few years after its construction. The structure became a city toll operation in 1940 and a free state bridge in 1955. It has recently been demolished. Yet another Woods Brothers project, the Plattsmouth Bridge followed a similar plan for financing and construction. Like the Blair and Nebraska City bridges, the 1,420-foot truss bridge was erected under the authority of the locally organized Plattsmouth Bridge Company. Completed in 1930 at an estimated cost of $700,000, with financial backing from eastern capitalists, it still operates as a toll bridge today.

37 *Omaha World-Herald*, 26 July 1929, page 1.

38 Clark O'Hanlon began his law practice in Blair in 1891 with the firm of Osburn-Farnsworth, becoming a member of the Osburn-O'Hanlon firm prior to establishing an independent practice.

39 Forrest B. Shrader, *A History of Washington County, Nebraska* (Omaha: Magic City Printing Company, 1937), page 341. (The O'Hanlon firm remains in business in Blair today as a fourth generation enterprise.)

40 *A History of Washington County, Nebraska*, page 341.

41 *Blair Tribune*, 28 May 1925, page 1.

42 Certificate of Incorporation of the Nebraska - Iowa Bridge Corporation:
FIRST, the name of this corporation is the NEBRASKA - IOWA BRIDGE CORPORATION.
SECOND, Its principal office in the State of Delaware is to be located at 900 Market Street, in the City of Wilmington, County of New Castle, and the name and address of its resident agent is CORPORATION SERVICE COMPANY, 900 Market Street, Wilmington, Delaware.

THIRD, The nature of the business and the objects and purposes proposed to be transacted, promoted and carried on, are to do any or all of the things herein mentioned, as fully and to the same extent as natural persons might or could do, vis:

To construct, maintain and operate a Toll Bridge for foot-passenger and vehicle traffic across the Missouri River between the States of Nebraska and Iowa, near the City of Blair, Nebraska, and to construct, maintain and operate other such Toll Bridges at such other locations as may be deemed advisable.

To purchase, take, own, hold, deal in, mortgage or otherwise lien and to lease, sell, exchange, transfer or in any manner whatever dispose of real property, situated within or without the State of Delaware.

To manufacture, purchase or otherwise acquire and to hold, own, mortgage, pledge, sell, transfer or in any manner dispose of, and to deal and trade in goods, wares, merchandise and personal property of any and every class and description and wherever situated.

To acquire the good will, rights and property and to undertake the whole or any part of the assets and liabilities, of any person, firm, association or corporation; to pay for the same in cash, the stock of this company, bonds or otherwise; to hold or in any manner to dispose of the whole or any part of the property so purchased; to conduct in any lawful manner the whole or any part of any business so acquired and to exercise all the powers necessary or convenient in and about the conduct and management of such business.

To guarantee, purchase or otherwise acquire, hold, sell, assign, transfer, mortgage, pledge or otherwise dispose of shares of the capital stock, bonds or other evidences of indebtedness created by other corporations and while the holder of such stock to exercise all the rights and privileges of ownership, including the right to vote thereon, to the same extent as a natural person might or could do.

To purchase or otherwise acquire, hold, use, sell or in any manner dispose of and to grant licenses or other rights therein and in any manner deal with patents, inventions, improvements, processes, formulas, trade-marks, trade-names, rights and licenses secured under letters patent, copyrights or otherwise.

To enter into, make and perform contracts of every kind for any lawful purpose, without limit as to amount, with any person, firm, association or corporation, town, city, county, state, territory or government.

To draw, make, accept, endorse, discount, execute and issue promissory notes, drafts, bills of exchange, warrants, debentures and other negotiable or transferable instruments.

To issue bonds, debentures or obligations and to secure the same by mortgage, pledge, deed of trust or otherwise.

To purchase, hold, and re-issue the shares of its capital stock.

To carry on any or all of its operations and business and to promote its objects within the State of Delaware or elsewhere, without restrictions as to place or amount.

To carry on any other business in connection therewith.

To do any or all of the things herein set forth to the same extent as natural persons might or could do and in any part of the world, as principals, agents, contractors, trustees or otherwise, alone or in company with others.

FOURTH. The total authorized capital stock of this corporation is Twenty-Two Thousand (22,000) shares, of which amount Two-Thousand (2,000) shares, of the par value of One Hundred Dollars, ($100.00) each, amounting to Two Hundred Thousand Dollars, ($200,000) are preferred stock and Twenty Thousand (20,000) shares which shall be without nominal or par value, are common stock.

Said preferred stock shall entitle the holder thereof to receive out of the net earnings and the company shall be bound to pay a fixed cumulative dividend at the rate of seven per centum (7%) per annum, payable semi-annually, before any dividends shall be set apart or paid on the common stock and the preferred stock shall not participate in any additional earnings or profits.

The holders of preferred stock shall, in case of liquidation or dissolution of the company, be entitled to be paid in full both the par value of their shares and the accumulated unpaid dividends before any amount shall be paid to the holders of the common stock, and the remaining assets shall be distributed among the holders of common stock exclusively in proportion to their holdings.

Said preferred stock shall be subject to redemption at One Hundred and Two Dollars ($102.00) per share, and accumulated dividends unpaid at the time of redemption, on any date of payment or preferred stock dividend or at such other time or is such other manner as the board of directors shall determine.

The holders of preferred stock shall not by reason of their holdings thereof, be entitled to vote at meetings of stockholders, the voting power being vested in the holders of the common stock.

Without action by or consent of the stockholders, the board of directors may issue the common stock without par value or any part thereof from time to time for such consideration as may be fixed from time to time by said board, and any and all such shares so issued, when the consideration therefor, fixed by the board of directors, has been fully paid or delivered, shall be full paid stock and not liable to any further call or assessment thereon.

The number of shares with which it will commence business is Thirty (30) shares.

FIFTH. The name and place of residence of each of the original

subscribers to the capital stock and the number of shares subscribed for by each are as follows:

NAME	RESIDENCE	NUMBER OF SHARES
James T. Wachob	Omaha, Nebraska	10 Common
J.C. Rahel	Omaha, Nebraska	10 "
Reed O'Hanlon	Blair, Nebraska	10 "

SIXTH. This corporation is to have perpetual existence.

SEVENTH. The private property of the stockholders shall not be subject to the payment of corporate debts to any extent whatever.

EIGHTH. The furtherance and not in limitation of the powers conferred by the laws of the State of Delaware, the board of directors is expressly authorized:

To make and later the by-laws;

To fix the amount to be reserved as working capital and to authorize the cause to be executed mortgages and liens upon the property and franchises of this corporation;

If the by-laws so provide or by resolution passed by majority of the whole board, to designate two or more of their number to constitute an executive committee, which committee shall for the time being, as provided in said resolution or in the by-laws of this corporation, have and exercise any or all of the powers of the board of directors in the management of the business and affairs of this corporation and have power to authorize the seal of this corporation to be affixed to all papers which may require it;

From time to time to determine whether and to what extent and at what times and places and under what conditions and regulations the books and accounts of this corporation, or any of them other than the stock ledger shall be open to the inspection of the stockholders; and no stockholder shall have any right to inspect and account or book or document of the corporation, except as conferred by law or authorized by resolution of the directors or of the stockholders.

If the by-laws so provide, the stockholders and directors shall have power to hold their meetings, to have an office or offices and to keep the books of this corporation (subject to the provisions of the statute) outside of the State of Delaware at such places as may from time to time be designated by them.

This corporation may in its by-laws confer powers additional to the foregoing upon the directors, in addition to the powers and authorities expressly conferred upon them by law.

The objects specified herein shall, except where otherwise expressed, be in no way limited nor restricted by reference to or inference from the terms of any other clause or paragraph of this certificate of incorporation. The objects, purposes and powers specified in each of the clauses or paragraphs in this certificate of incorporation shall be regarded as independent objects, purposes and powers.

The foregoing shall be construed both as objects and powers and the enumeration thereof shall not be held to limit or restrict in any manner the general powers conferred on this corporation by the laws of the State of Delaware.

This corporation reserves the right to amend, alter, change or repeal any provision contained in this certificate of incorporation, in the manner now or hereinafter prescribed by law and all rights conferred on officers, directors and stockholders herein are granted subject to this reservation.

WE, THE UNDERSIGNED, being all of the original subscribers to the capital stock, for the purpose of forming a corporation, in pursuance of an Act of the Legislation of the State of Delaware, entitled "AN ACT PROVIDING A GENERAL CORPORATION LAW", (approved March 10, 1899) and the acts amendatory thereof and supplemental thereto, do make and file this certificate of incorporation hereby declaring and certifying that the facts herein stated are true and do respectively agree to take for such consideration as may be fixed by the board of directors, the number of shares of stock hereinbefore set forth, waiving all requirements of the statutes of the State of Delaware relating to notice of assessments on the stock hereby subscribed, and accordingly hereunto have set our respective hands and seals this 30th day of July A.D. 1927.

James T. Wachob
J.C. Rahel
Reed O'Hanlon

43 *Blair Tribune*, 26 January 1928, page 1.

44 *Blair Tribune*, 1 March 1928, page 1.

45 *Blair Pilot*, 18 July 1928, page 2.

46 *Blair Tribune*, 12 July 1928, page 1; 19 July 1928, page 1.

47 *Blair Pilot*, 8 August 1928, page 1.

48 *Blair Pilot*, 23 August 1928, page 1.

49 "Woods Brothers of Lincoln, Nebraska," *Nebraska History Magazine*, January-March 1927, page 62; Sara Mullin Baldwin, ed. *Who's Who in Lincoln* (Lincoln: Robert M. Baldwin, 1928), page 232.

50 *Blair Pilot*, 20 June 1928, page 1.

51 *Blair Pilot*, 28 February 1928, page 1.

52 *Blair Tribune*, 3 May 1928, page 1.

53 In composition, the 2.4 million pound aggregate weight of the railroad trusses was made up of 37% rolled steel, with the remaining weight of wrought (60%) and cast (3%) iron. Coincidentally, the trusses of the proposed highway bridge, compromised entirely of structural steel, totaled the same approximate weight, having been made considerably heavier due to the stricter requirements enforced by the War Department for bridges located on strategic routes.

54 "The Merchants' Bridge across the Mississippi River at St. Louis, Mo." *Engineering News*, 21 December 1889, pages 578-79; "The St. Louis Merchants' Bridge, *Engineering*, 5 June 1891, pages 686-87.

55 The original Whipple trusses were transported to Wyoming by the railroad - one span in 1925 and the other two in 1927 - to serve two separate crossings of the Wind River.

56 *Blair Tribune*, 17 May 1928, page 1.

57 *Blair Pilot*, 20 June 1928, page 1.

58 *Blair Pilot*, 20 June 1928, page 1.

59 Gregory M. Franzwa, *Legacy: The Sverdrup Story* (St. Louis: Sverdrup Corporation/Patrice Press, 1978), page 4.

60 *Legacy: The Sverdrup Story*, page 13.

61 George S. Morison, *The B.C. Bridge*, page 4.

62 Morison's original willow mats were extended 100 feet south of the new bridge on the Iowa side of the river by the woods Brothers using the same construction method.

63 *Blair Tribune*, 12 July 1928, page 1; 19 July 1928, page 1.

64 *Blair Pilot*, 5 September 1928, page 1.

65 *Blair Pilot*, 5 September 1928, page 1.

66 *Blair Pilot*, 17 October 1928, page 1.

67 *Blair Pilot*, 14 November 1928, page 1.

68 *Blair Tribune*, 17 January 1929, page 1.

69 *Blair Pilot*, 16 January 1929, page 1.

70 *Blair Pilot*, 28 November 1928, page 1.

71 *Blair Tribune*, 4 July 1929, page 1:
"The new Abraham Lincoln Memorial Bridge, Blair's million and a quarter structure spanning the Missouri river east of the city, was thrown open to traffic at 6:00 o'clock last Saturday morning. Dr. R.G. Glanden and his wife of Chicago, Illinois, who had been vacationing at Yellowstone Park, arrived at the bridge promptly at opening time and received toll ticket No. 1 for the new bridge. Prof. A.H. Anderson with his wife and young son, drove the second auto across the bridge and received the second toll ticket. A number of other cars drove out from Blair to be among the first autos to cross the bridge and passed shortly after the opening of the bridge. Reed O'Hanlon, president of the Nebraska-Iowa Bridge Corporation, who own the new structure, issued the first toll ticket and Dr. Glanden informed him that an oil station attendant at Fremont had told him of the saving in miles he could make by using the road through Blair.
Dr. Glanden tendered a $20 bill in payment of toll and there was confusion among the toll takers when they announced they couldn't make the change. Mr. O'Hanlon and others dug into their pockets and made up the amount. 'You should be proud that yours is the first car to pass over the Abraham Lincoln Memorial bridge, which marks a new era in transcontinental transportation,' Mr. O'Hanlon told Dr. Glanden.

72 *Blair Pilot-Tribune*, 28 March 1929, page 1.

73 *Blair Pilot-Tribune*, 14 March 1929, 21 March 1929, page 1.

74 *Blair Pilot-Tribune*, 11 July 1929, page 1.

75 *Blair Pilot-Tribune*, 1 August 1929, page 1.

76 *Omaha Bee*, 26 July 1929, page 1.

77 *Blair Pilot-Tribune*, 1 August 1929, page 1.

78 *Omaha World-Herald*, 26 July 1929, page 1.

79 *Omaha World-Herald*, 26 July 1929, page 1.

80 *Omaha Bee*, 26 July 1929, page 1.

81 *Blair Enterprise*, 1 August 1929, page 1.

82 *Blair Tribune*, 1 August 1929, page 1.

83 *Omaha Bee*, 26 July 1929, page 1.

84 *Blair Tribune*, 3 July 1930, page 1.

85 *Blair Tribune*, 3 July 1930, page 1.

86 *Washington County, Nebraska History*, page 14.

87 Mark Morris, Letter to L.M. Clauson, 25 July 1962, Blair Bridge Correspondence File, Iowa Department of Transportation.

88 *Blair Enterprise*, 11 October 1962.